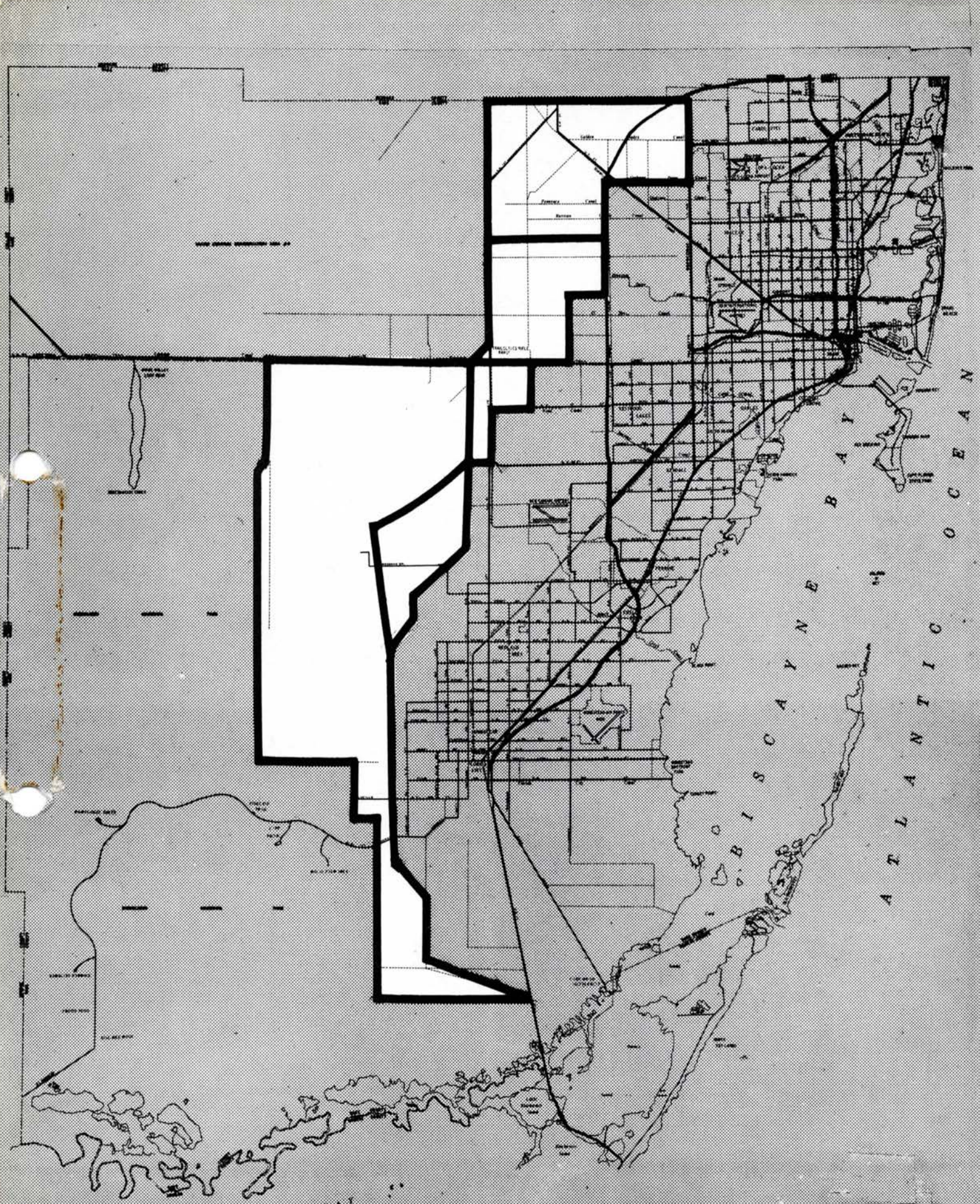
6-1974

East Everglades Moratorium Area Planning Study

Metropolitan Dade County Planning Department



EAST EVERGLADES MORATORIUM AREA

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EAST EVERGLADES MORATORIUM AREA
PLANNING STUDY

June 1974

Metropolitan Dade County Planning Department

Appendices

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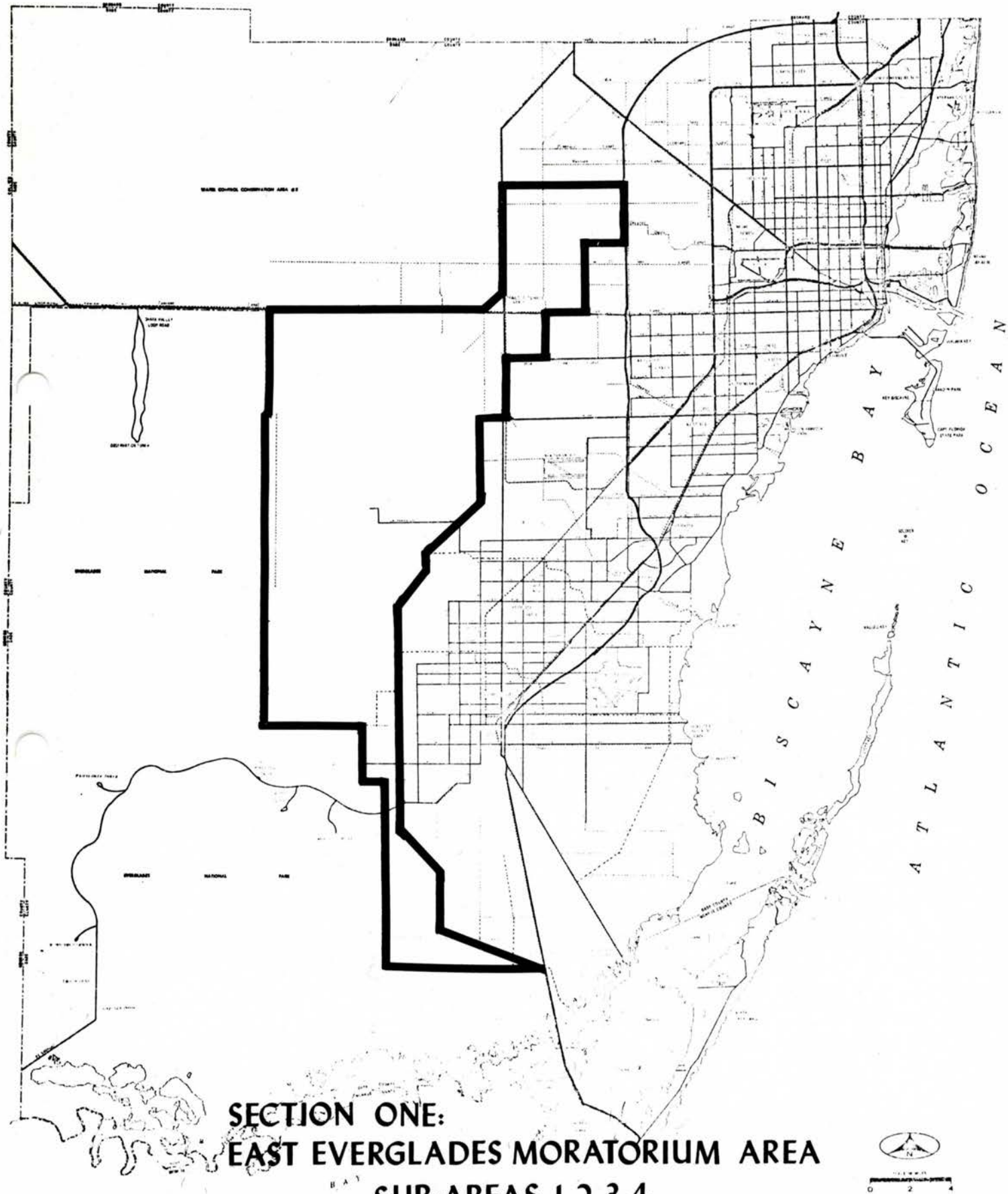
PREFACE

On March 19, 1974, when the East Everglades Moratorium was imposed, the Planning Department was engaged in two intricately related endeavors. One was the Environmental Protection Guide, or Part 2 of the Comprehensive Development Master Plan, and the second was the I-75/Regional Airport Area Planning Moratorium Study. The Environmental Protection Guide analyzes the soils, hydrology, vegetation, and wildlife species as well as other pertinent data to determine the type of land use, intensity, and conditions necessary to safeguard this environmentally sensitive area.

The East Everglades Moratorium Area is primarily a natural environmental study based on the Environmental Protection Guide. The present character and function of the area and man's impact on them have been inventoried and analyzed. Land use recommendations and implementation tools for environmental protection are suggested based on a series of Environmental Protection Zones. This study does not discuss in as great a detail such urban issues as density, transportation, and urban services which typify other area studies.

The I-75/Regional Airport Area Study (Section Two of this report) is included in the East Everglades Moratorium Area. It comprises approximately 54 square miles of the northern portion of the East Everglades Moratorium Area. The I-75 Airport Study preceded the East Everglades study; however, it was subsequently included as part of the larger study. It differs from the East Everglades Study in the sense that the I-75/Airport Study addresses natural and urban environmental conditions while the East Everglades Study predominantly addresses the natural environmental issue. The former study was originally initiated to insure land use compatibility with potential airport development and growth in northwest Dade County. It was also undertaken to evaluate the appropriateness of existing zoning as well as the impact of the Homestead Extension of the Florida Turnpike and the proposed I-75 corridor.

The two studies have been combined into one package. For purposes of discussion, the East Everglades Moratorium Area has been divided into five Sub-areas as depicted on the regional location map (see Figure 1-b). The bulk of the East Everglades study is contained in Sub-areas 1 through 4 which comprises Section One of this report; Sub-area 5, the I-75/Regional Airport Area Planning Study is contained in Section Two (see Figure 1-a on page 1-2).



SECTION ONE:
EAST EVERGLADES MORATORIUM AREA
SUB-AREAS 1,2,3,4

FIG. 1-A

PART I: INTRODUCTION

BACKGROUND

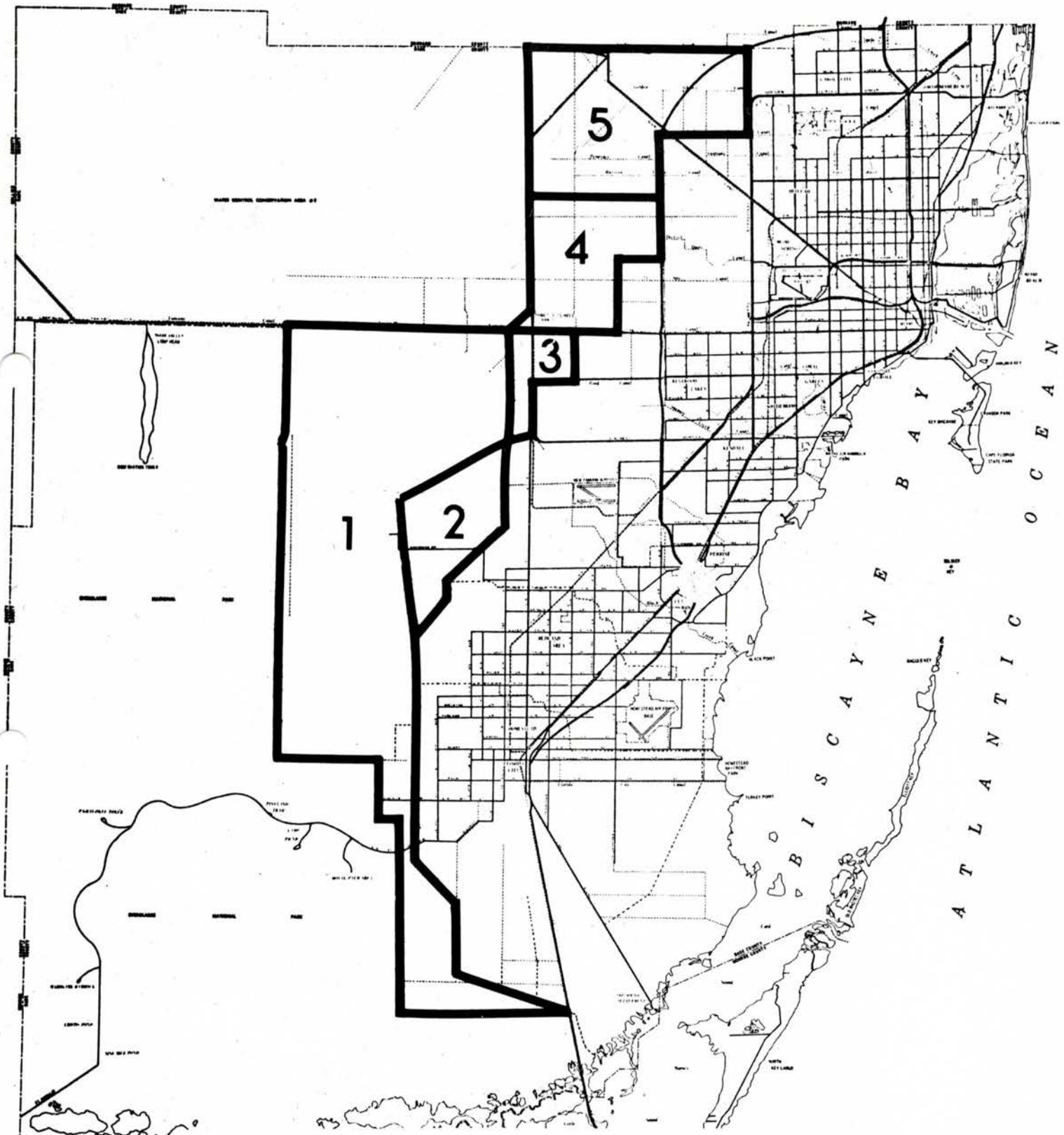
On March 19, 1974, the Board of County Commissioners passed a resolution imposing a building moratorium, known as the East Everglades Moratorium, on an area consisting of approximately 323 square miles of west Dade County. The purpose of this moratorium was to allow time for preparing a comprehensive study relating to the protection of the fresh water supply and the natural ecosystems which now function in this part of the county. On the basis of this study, the county decision makers would be provided with information required for more scientific and rational decisions concerning future land use policy in this area.

The moratorium request was initiated by Mr. James Redford, Chairman pro tem, Committee for Sane Growth, in a correspondence to County Manager Ray Goode (see Appendix A). In addition to a discussion of the value of this area to the water supply of Dade County, Mr. Redford also made reference to the drought of 1971 and the prevailing serious conditions of South Florida's fresh water needs as well as to the major study currently being conducted by the Central and Southern Florida Flood Control District from which they will determine a water allotment program for each of the counties being served by the Biscayne Aquifer.

The request for the moratorium was forwarded to the Dade County Planning Department for its recommendations. The Planning Department concluded that there was substantial evidence to indicate that development under the existing zoning, which was mostly AU and GU, could be detrimental to the county's ecosystem. Prior to the moratorium, AU and GU zoning permitted development on one acre lots. During the moratorium AU and GU zoning was changed to require development on lots having a minimum of five acres. This is still not considered to be entirely adequate to protect most of th a large section of which has been preliminarily designated for preservation in the Environmental Protection guide, Part 2 of the Comprehensive Development Master Plan.

Besides those areas determined to be environmentally sensitive, other area were considered important because they aided the water recharge system to the Biscayne Aquifer and the County's well fields. Taking the above factors into account and deleting areas which were disturbed or already zoned for urban use according to approved plans, the final moratorium area approved is generally described as follows: (See Figure 1-b)

> Bounded on the north by the Dade County-Broward County line between N.W. 87th Avenue and N.W. 177th Avenue.
>
> Bounded on the west by L30 north (Krome Avenue) from the County line to the Tamiami Trail; then west along Tamiami Trail to the Everglades National Park boundary; then south and east along the National Park boundary to the northwest corner of Section 19, Township 59, Range 38.



REGIONAL LOCATION MAP
EAST EVERGLADES MORATORIUM AREA

FLORIDA

Metropolitan Dade County Planning Department

FIG. 1-B

Bounded on the south by a line running east from the northwest corner of Section 19, Township 59, Range 38 to the intersection of C-111 and U.S. 1 along the National Park boundary.

Bounded on the east by C-111 from the intersection with U.S. 1 to the point where C-111 becomes L-31 north; then north and east along L-31 north to the south west corner of Section 36, Township 54, Range 38; then east to Krome Avenue (State Road 27); then north to the Bird Road extension; then east two miles along the Bird Road extension to the southeast corner of Section 17, Township 54, Range 39; then north to the Tamiami Trail along theoretical S.W. 157th Avenue; then east along the Tamiami Trail two miles to theoretical S.W. 137th Avenue; then north along theoretical S.W. 137th Avenue to the southeast corner of Section 22. Township 53, Range 39; then east along N.W. 41st Street to N.W. 117th Avenue, then north along N.W. 117th Avenue to theoretical N.W. 138th Street then east along theoretical N.W. 138 Street to N.W. 77th Avenue and the Palmetto Expressway; then north along N.W. 77th Avenue to the Dade-Broward County line. The Legal Descriptions are given in Appendix B.

PURPOSE AND SCOPE OF STUDY

The major purpose of this moratorium, like others imposed under the Dade County's Moratorium Ordinance, is to eliminate pressure for development in the designated moratorium area for a reasonable period of time. During this time, a special study of the area can be prepared which will define and recommend the appropriate land uses which are in conformance with the existing character and function of the area. Unlike most other moratoria, where the major issue leading to the moratorium request has been the gradual encroachment of incompatible or incongruous land uses upon a formerly definable area, the major concern in this area is the protection of the County's fresh water supply and the naturally functioning ecosystems which characterize the area. It is, therefore, a purpose of the study to provide the basic information necessary for decision makers to have a rational basis for regulating uses within the area so as to keep future use compatible with the natural environment.

The scope of this study, like the purpose, differs somewhat from traditional moratorium studies. That is, the unique environmental character of the area dictates that the thrust of the study be towards analysis of an unurbanized, natural area. Considerable detail is provided, therefore, on the natural environment, its sensitive character and its threshold for impacts, both man induced effects and the potential impact of future activities.

A broader, less detailed, emphasis is put on other aspects of the study such as the availability and quality of existing and proposed urban services, land use, and zoning patterns within the area. A somewhat different approach is also taken in the study relative to the implementation measures being considered. Whereas most planning studies resulting from a moratorium seek to achieve implementation through zoning and the use of existing tools, many recommended tools for this study will be new concepts which have not been previously tested in Dade County.

PART II: EXISTING CONDITIONS AND TRENDS

GENERAL OVERVIEW

At present, the study area is characterized mostly by undeveloped land with scattered residential settlements. The primary focus of this section is on natural environmental conditions within the study area. A cursory view of the urban environment is studied as well.

The following pages explore the natural environmental character and the natural systems functioning within the region in an attempt to assess the impact which potential development could have on this environmentally sensitive portion of Dade County. This information is accompanied by a look at the urban environment, particularly existing land uses, zoning, ownership patterns, and community facilities and services. The provision (both the timing and location) of public services and the environmental sensitivity of the area are two of the more significant factors determining the types of land uses which will be recommended in the study area.

NATURAL ENVIRONMENT

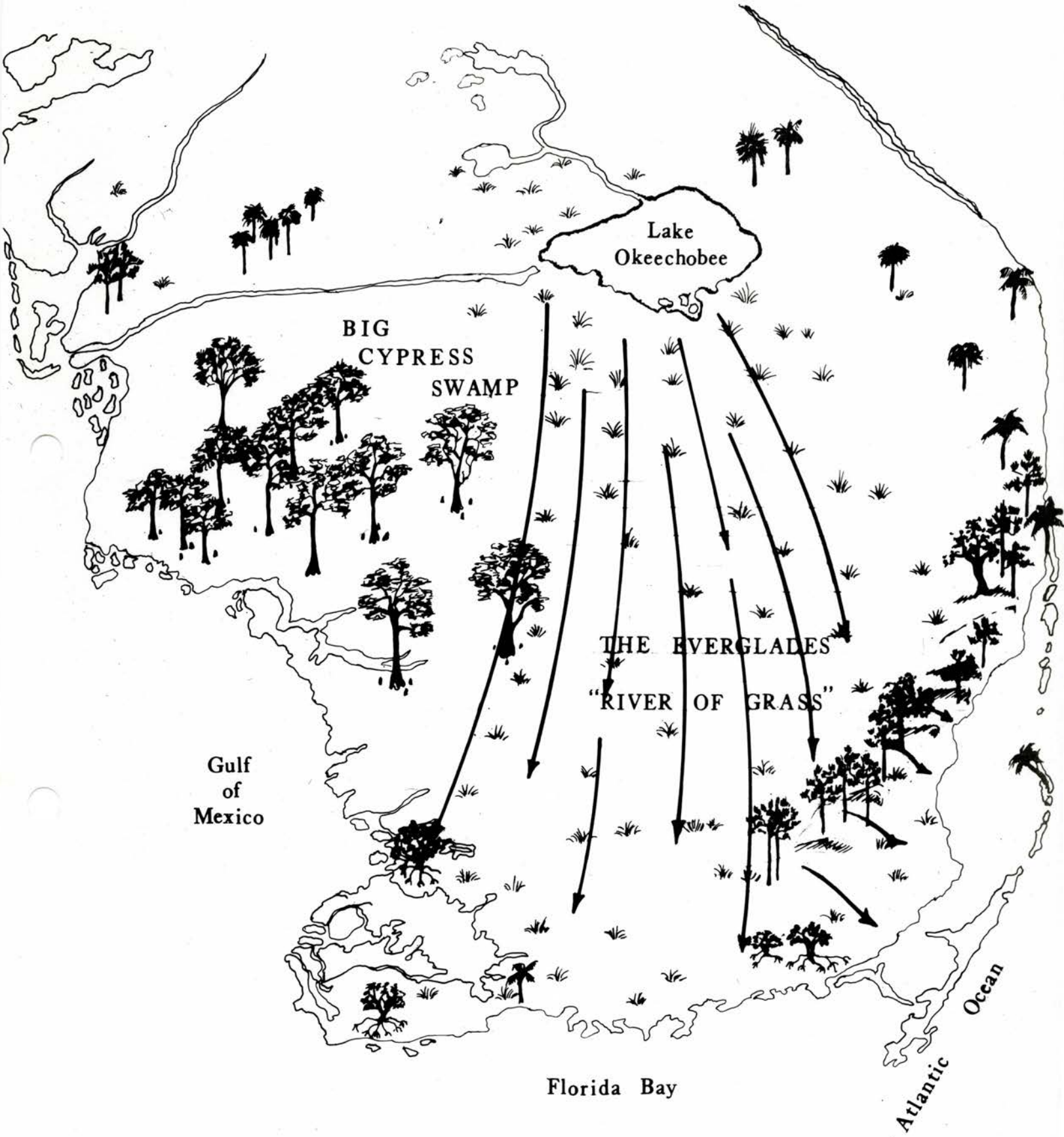
The East Everglades Moratorium Area Study is situated in a former portion of the Everglades drainage basin. A study of the environmental character and the natural systems functioning within this region is necessary in assessing the impact which potential development may have on this area. Within this environmentally sensitive region it will be necessary to look closely at the suitability of land for development based on soil conditions, water table level, water quality, flood hazard, and other environmental factors. The following section discusses those resource elements within the study area.

Because of the area's historical interrelatedness with the Everglades physiographic province a brief description of the Everglades and a discussion of the relationship of the study area to the Everglades is found in the following paragraphs. Following the historical look at the Everglades Basin is a section discussing the alterations to this system caused by the construction of major flood control facilities.

The third section of the natural environment discusses the Biscayne Aquifer, its importance and its complex interrelationships to the East Everglades Moratorium Area.

The Everglades Basin (See Figure 1-d)

The Everglades Basin occupies an irregularly defined area of about 4,000 square miles extending from an area slightly north of Lake Okeechobee to the salt water marshes and mangrove swamps which border on Florida Bay on the south. The Everglades extend south and south westward



HISTORIC EVERGLADES BASIN

FIG. 1-D

from Lake Okeechobee in a vast arc about 40 miles wide and 100 miles long. The basin is bordered generally on the west by the Big Cypress - Devils Garden Area and the Atlantic Coastal Ridge on the east.

The geology of the Everglades basin has been primarily influenced by the ocean waters during the glacial and inter-glacial ages of the Pleistocene Epoch resulting in the emergence and submergence of the Floridan Plateau. It was during the Aftonean inter-glacial age that the basal layers of the floor of the Lake Okeechobee - Everglades depression were laid - the Fort Thompson formation. This formation is a wedge-shaped deposit increasing in thickness in a west to east direction towards the Atlantic Ocean. This formation has a thickness of approximately 120 feet in the Miami area and its maximum thickness may be about 200 feet in the Ft. Lauderdale-Miami area.

The Fort Thompson formation can be separated into two parts on the basis of its hydrologic characteristics. The northern part of the formation underlies the upper Everglades area, which includes northwestern Broward County. Its rocks are generally of low permeability and it averages less than 10 feet in thickness. The southern part of the formation is extremely permeable and forms a major part of the Biscayne Aquifer. The southern part of the Fort Thompson formation is composed principally of white to cream sandy limestone, calcareous sandstone, beds and pockets of quartz sand and thin beds of dense, hard, fresh-water limestone, perforated by numerous solution holes, many of which are filled with younger materials.

In Dade County, the Fort Thompson formation is overlain by Miami Oolite. The basal layers of this deposit were probably laid down during the Yarmouth inter-glacial age. From a transition zone near Boca Raton, the Miami Oolite underlies the Atlantic Coastal Ridge south to, and beyond, Florida City. It is thickest along the coast, possibly reaching a maximum thickness of 40 feet, but its base is seldom lower than 20 feet below sea level. Inland from the ocean the oolite thins out, and on the eastern margin of the Big Cypress swamp it disappears entirely.

The oolite often contains considerable fine to medium quartz sand that fills solution holes and channels. These solution holes occupy so much of the total volume of the oolite that they give it an exceedingly high permeability in a vertical direction. The horizontal permeability, however, is considerably lower.

Following the Pleistocene is the Recent Epoch. The primary importance of this epoch as it relates to the Everglades Basin is the deposits of the Lake Flirt marl and the development of the organic soils. The term Lake Flirt marl is here used to include all the local variations of the marls as they occur throughout the basin.

The Lake Flirt marl is principally a light-gray, freshwater, calcareous mud deposit. The formation is widely distributed in the Everglades basin and usually lies in direct contact with the surficial rocks of the underlying Fort Thompson formation. It fills and rather effectively seals the solution holes of these rocks. The thickness of this marl ranges from a feather edge to several feet. Where the marl deposits are more than 2 feet thick, they are valuable as agricultural lands.

The Lake Flirt marl is relatively impermeable and acts as a seal that prevents movement of water through it to underlying more permeable rock. Where present in thicknesses of a foot or more, it is an important aid in controlling water levels, especially above the highly permeable rocks of the Fort Thompson formation and the Miami Oolite.

The organic soils consist of the peats and mucks. The peats and mucks of the Everglades range in thickness from a feather edge around the borders and in the south to 8 or 10 feet in the north near Lake Okeechobee.

The organic deposits were formed in marshy areas where large amounts of vegetative matter were annually growing, dying, and sinking below the water surface. Under such conditions the organic material did not decay and dissipate but underwent change slowly. Where little or no inorganic matter was incorporated into the deposit, it became a peat; where considerable amounts of mineral matter were deposited with the organic materials, it became muck. In the Everglades all types are found, from purely aquatic and semiaquatic peats to highly inorganic mucks.

Soils which have been derived from the remains of aquatic and succulent plants and trees are the Everglades, Loxahatchee, and Gandy peat. They have formed mainly from sawgrass, lilies, gannets and other water tolerant plants and leaves and stems of woody plants. Peats within Dade County range from 6 to 96 inches in thickness. The very shallow phases are less than 36 inches in depth, the moderately deep 36 to 60 inches and deep phases generally exceeding 60 inches.

The Everglades peat has developed from the remains of sawgrass, lily, sedge, and myrtle. It is closely associated with the Loxahachee peats but differs from them chiefly in having a very dark brown or black surface layer. This peat under natural conditions is very poorly drained and may be covered with water during many months of the year. The Everglades series consist of shallow phase peat over either marl or shallow to deep sands and the Everglades peat deep phase over shallow marl or limestone.

Loxahatchee peat occurs in the central part of the Everglades basin in the western half of the county. Native vegetation is lily, pickerelweed and other aquatic plants. This series also has shallow and deep phases of very spongy fibrous material and is characteristically covered with water during the greater part of the year.

Gandy peat is on the bay laurel and myrtle islands within the Everglades Basin. They stand 1 to 3 feet higher than the surrounding marsh. On some of the islands the upper 12 to 24 inches of the Gandy peat may be moderately well drained but the lower profile may be saturated with water.

In the past, under normal conditions, these organic materials were accumulating slowly and building up the body of the Everglades soils. At present, with the drainage canals in operation, the organic soils are being lost rapidly. This dissipation takes place principally because of drainage that allows fires, natural oxidation, shrinkage, and compaction. As a result of compaction, "subsidence valleys" have developed along major Everglades drainage canals.

The organic soils of the Everglades have a comparatively low coefficient of permeability. Water moved through them very slowly under the low gradients existing there. This low permeability of these soils is also an important factor in controlling water levels, particularly during the dry season.

In addition to aiding in the maintenance of water levels, the organic soils play a major role in determining water quality. Soils have an ion exchange capacity that allows them to concentrate plant nutrients, small organic components, etc., from the soils and their own root systems. Thus, these substances are released slowly and sparingly into the surface and ground water so that concentrations rarely get above ambient levels.

The ion exchange of the soil, plus the native plants in equilibrium with it constitute the major control of water quality in South Florida. The areas which have maximum ion exchange capacities are found in peats, mucks, and various mixtures of the two. Consequently, any factor such as fire on dry ground, clearing, planting of exotics, drainage of low pH products, and construction which endangers this soil should be assiduously avoided.

History of Everglades Drainage

For more than 5000 years water that accumulated seasonally on the Kissimmee prairies flowed via the Kissimmee River into Lake Okeechobee. At times, the lake spilled over its southern rim and this flow together with local rainfall commenced an almost imperceptibly slow journey south through the Everglades eventually to pass through the coastal zone to Florida Bay and the Gulf of Mexico. The Kissimmee River-Lake Okeechobee-Everglades drainage area tributary to the present Everglades National Park originally encompassed about 9000 square miles.

Shortly after attaining statehood in 1845, Florida requested Congress to undertake a survey of the Everglades with a view to reclamation; Buckingham Smith, a prominent citizen of St. Augustine, at the direction of the

Secretary of the Treasury undertook a reconnaissance of the Everglades and submitted a report (1848) indicating optimism on the matter of drainage of the vast area. Smith further stated that such an undertaking, if successful would be of great benefit to the country. Under the provisions of the Federal Swamp and Overflow Lands Act of 1850, Florida received some 20,000,000 acres of swamp and overflowed lands, among which was included the Everglades. In 1851, the Florida Legislature passed an act accepting the grant and providing for a board of internal improvement. In 1855, the Florida Legislature passed a new act creating the Trustees of the Internal Improvement Trust Fund, the main trust being the drainage and reclamation of swamp and overflowed lands.

During the next 25 years little progress was made toward accomplishing what both Federal and State governments considered to be of great importance in the development of Florida. The first comprehensive drainage plan in South Florida can be traced back to the 1880's when the first drainage canals and levees were built around Lake Okeechobee. This project envisioned the permanent lowering of Lake Okeechobee and lakes in the headwaters of the Kissimmee River. It was believed this would also result in lowering water levels in the Everglades along the southern rim of the lake. It should be noted that the lowering of Lake Okeechobee was the point of this whole drainage scheme. Efforts for the next several years would be centered in the upper Kissimmee River basin although first attempts to lower the lake were by cutting canals from the Caloosahatchee River to Lake Flirt; and from Lake Flirt to Lake Hicpochee and thence into Lake Okeechobee. These canals which varied from 24 to 46 feet in width and from 4 to 10 feet in depth were probably completed by 1885. Some attempts were made to divert water from the lake to the area of the Big Cypress west of the Everglades. The channel to the Caloosahatchee River represents the first reduction in natural flow to the Everglades.

The need for further flood control works and drainage channels was accelerated in southeast Florida by the construction of the railroad which helped south Florida develop at a rate faster than the rest of the state. Once the railroad was established, efforts were made by land speculators to drain and reclaim inland areas for agriculture and to accommodate rapid urbanization. Due to inadequate engineering practices, inadequate information on the hydrologic conditions, and the enormous undertaking attempted, these early efforts failed.

By 1905, it was apparent that efforts to drain and reclaim the lands, under the jurisdiction of the Trustees since 1855, were in essence ineffectual, if not a total failure. The Florida Legislature created the Everglades Drainage District in 1905 and for the next two decades, amid controversy as to methods, canals were dug and levees built.

It was during this period that three small coastal rivers -- Hillsboro North New River and Miami -- were extended into the Everglades and connected with Lake Okeechobee. Two overland canals -- the West Palm Beach and St. Lucie -- were dug from the lake to tidewater. These channels cross the ancient floodway of the Everglades and the canals intercepted or reduced the normal southward flow and moved it away from the Everglades area and to the ocean. The third major disruption of water supply resulted from the construction of levees around the southern perimeter of Lake Okeechobee between 1921 and 1926.

A need for these levees arose when drainage of the Everglades along the southern rim of the lake resulted in general subsidence of peat to 4.5 feet below the original natural elevation.

Everglades Drainage District for the most part failed. The effect of the more than 400 miles of canal excavated during the 18 years after 1913 was to overdrain the land during dry seasons while they were inadequate to furnish flood protection during wet seasons. The inadequacy of the Everglades Drainage District was further evidenced by the destruction of its levees along the south shore of Lake Okeechobee in the 1906 and 1928 hurricanes, the latter of which resulted in a loss of more than 2,000 lives.

As a result of these disastrous storms the first Federal water control program for the area was initiated. The Corps of Engineers began the construction of improved outlet works and protective levees at Lake Okeechobee. These works were completed about 1937.

While the Lake Okeechobee levees prevented reoccurrence of the 1926 and 1928 flooding disasters, they also forever blocked the natural flow of water from the far reaches of the Kissimmee River through the Everglades. The water which once flowed south toward Florida Bay was now diverted to the Gulf of Mexico and the Atlantic Ocean via canals and canalized rivers. Land which was historically inundated by water spilling out of the Lake Okeechobee basin was now deprived of excess water and began to dry. As it dried, the danger of fire increased. By the early 1940's great areas of the Everglades were afire and in many areas the peat subsided due to burning, leaving bare rock exposed. In other areas peat subsided due to biochemical oxidation, compaction, and loss of the buoyant force of ground water as well as fires. In 1912, 95% of this organic soil was over 5 feet in depth while today only about 45% is that deep. It is estimated that by the year 2000 only about 12% will be over 3 feet in depth and 45% less than 1 foot in depth.

The hydrology of southeastern Florida had been affected significantly prior to 1945, when land drainage and reclamation were the principal objectives. The prime effect was a lowering of water levels along the coastal ridge and in the interior as a result of: (1) completion of coastal drainage canals along the urbanizing coastal ridge to provide dry land for housing developments; (2) completion of the West Palm Beach, the Hillsboro, the North New River and the Miami canals which intercepted or diverted water from the Everglades to the ocean; (3) construction of the levee on the south shore of Lake Okeechobee, which prevented southward spillage from the lake during hurricane seasons. Estimates indicate that water levels were lowered considerably, perhaps as much as 5 or 6 feet throughout southeastern Florida as a result of uncontrolled drainage.

Man had struggled for about 100 years to "reclaim" the Everglades. Yet, while only a small segment was profitably farmed, much valuable land had been allowed to burn away, and the flora and fauna of the entire Everglades including that within the National Park had been seriously affected.

In 1947, the year Everglades National Park was established, an unusually wet rainy season and two wet hurricanes combined to once again inundate the Everglades, fill Lake Okeechobee, and cause $60,000,000 damage. Following the extensive flooding of South Florida and the east coast in 1947 and 1948 the Corps of Engineers received authorization to proceed with a yet more extensive system of canals and levees, with the Corp's primary concern being flood control, agricultural irrigation, and the provision of water for growing urban areas. In the planning of the Federal project the needs of the eastern coastal area and those of Everglades National Park were again overlooked.

In partial response to congressional Authorization, the Central and Southern Florida Flood Control District was established in 1949. This agency, with the cooperation of the Corps of Engineers oversaw beginning in 1952, the development of a massive system of drainage canals and levees. In 1949 the Corps began construction of three conservation areas south of Lake Okeechobee and north and west of Miami. These areas were to be used for water surplus for agricultural needs south of Lake Okeechobee. Stored water would then be used during periods of rainfall deficiency. In addition to agricultural usage the stored water would provide recharge for the municipal well fields along the east coast and the maintenance of a freshwater head for protection against salt water encroachment into the Biscayne Aquifer.

With the completion of Levee 29 along the north park boundary and closure of the Structure 12 gates in 1962, the little remaining Everglades area still tributary to the park was blocked and henceforth flow would be artifically controlled. The Conservation Area remained below flood stage until 1966 and no Everglades water flowed to the Park between 1962 and November of

1965 with the exception of minor releases which were made to the Park in April 1964. This together with deficient rainfall in the period resulted in extreme stress upon the Everglades National Park's ecology. These droughts and the realization that the water needs of Everglades National Park were not being met caused Congress to authorize a restudy of the flood control project by the Corps of Engineers "with particular reference to recommendations as to the expansions and improvement of the authorized project to provide for the supply, distribution and conservation of water for the Everglades National Park, Florida."

Upon completion of the study in 1968 the Corps of Engineers recommended that the provision of water to the Park be made a "project purpose" and a minimum of 315,000 acre feet be annually delivered. Tentative agreement was reached between the National Park Service, the State of Florida and the Corps of Engineers, and in 1970 by enactment of Public Law 91-282. The park is to receive from the Flood Control project "not less than 315,000 acre feet annually." In addition, Public Law 91-282, authorizes the Corps to implement a plan which would alleviate most future water problems of South Dade County and the southeastern part of the Park. Under this plan, water will be conveyed to these areas via L-31 N canal from Conservation Area 3. Deliveries of water to the Park will be made in accordance with historical seasonality.

The period from 1946 to 1962 has been one of water control as well as flood control. The water control practices were an attempt to prevent further damage to water resources caused by the earlier uncontrolled drainage, during which flood control was of higher priority because urban areas were expanding inland and drainage systems required improvements.

The recent policies of the F.C.D. indicate a change toward a water conservation agency and away from a strict flood control and land reclamation agency. The drastic effects of completed projects demand that close scrutiny be given to all future projects with the maintenance of viable functioning eco-systems being the item of highest priority.

Related to the FCD is the Water Conservation District in Dade County which consists of secondary canals which feed into the primary canals of the FCD which in turn empty into Biscayne Bay. The secondary canals constitute a county-wide drainage district under the jurisdiction of the County, which, through its Public Works Department, controls their design and construction, maintains them, and controls discharges into them.

Biscayne Aquifer

The Biscayne Aquifer is that hydrologic unit of water-bearing rocks that carries unconfined groundwater in southeastern Florida. Almost the entire potable, industrial and agricultural water supply from Boca Raton southward comes from the Biscayne Aquifer. The Aquifer underlies all the

coastal areas and most of the Everglades to a little beyond the Broward-Palm Beach County line. The thickness of the Aquifer is greatest along the coast in the Miami area where it approaches 120 feet in places. The aquifer thickness decreases rapidly westward into the Everglades thinning out to a feather edge in eastern Collier and Monroe counties (see Figure 1-e).

The aquifer is composed mostly of limestone and sand. The high porosity and the many passages through the solution riddled limestone offer little resistance to flow. The result is one of the most permeable aquifers in the world which responds quickly to slight differences in the water table with the following consequences:

1. The water table has a low seaward gradient and is only a few feet above sea level.

2. The yield of wells are large.

3. The ground and surface water regimens have an uncommonly high interrelationship.

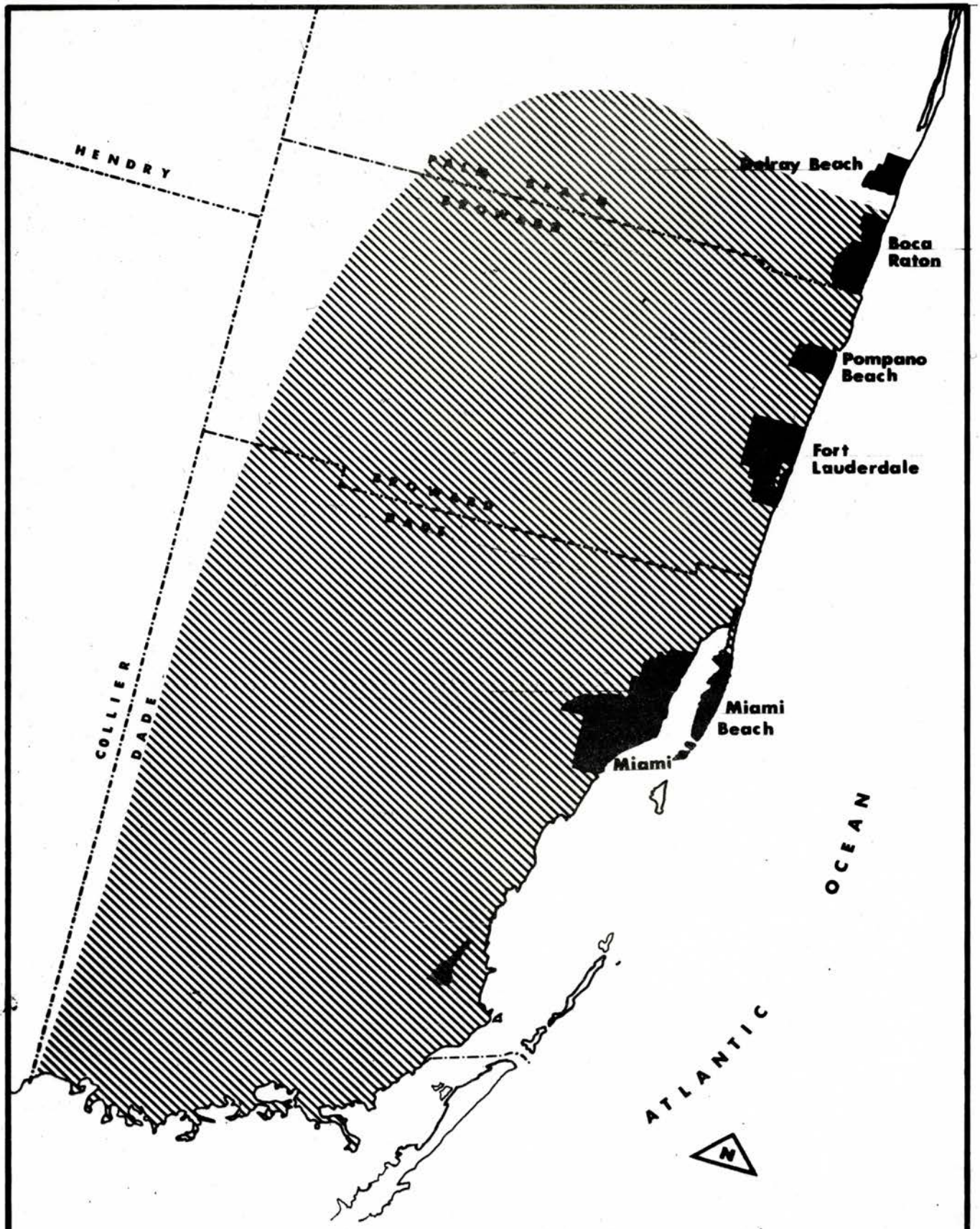
4. The water table reacts quickly to rainfall. There is a high rate of rainfall penetration and surface water infiltration and, although large, there is relatively little surface runoff compared to other locations.

5. The coastal areas are exposed to Biscayne Bay and susceptible to saltwater intrusion.

As indicated earlier the Fort Thompson formation and the Miami Oolite are the major formations comprising the Biscayne Aquifer. The water bearing and yielding properties of these formations are excellent.

All the water that recharges the Biscayne Aquifer is derived from either local precipitation or is conveyed via canals from Lake Okeechobee or the water conservation areas to the north. When rain falls upon the land surface, a part is evaporated, a part is used by plants, another portion runs off as surface water in streams or canals, or to fill lakes and ponds, and the remainder percolates rapidly through the thin sandy mantle to the ground water table. The water table is the upper zone of saturation below which all voids in the rock are filled by water. This water table in the Biscayne Aquifer is essentially open to the atmosphere and is marked by the level at which water stands in wells. The water table is relatively flat, has a low seaward gradient, and is only a few feet above sea level.

Normally in the Biscayne Aquifer the water table lies in the Miami Oolite, the Pamlico sand or within the organic soils (peats and mucks). The water table fluctuates in response to the variability of local rainfall, the effects of canalways, and finally from aquifer pumpage.



AREAL EXTENT OF BISCAYNE AQUIFER

FIGURE 1-e

Water in the Biscayne Aquifer is not level everywhere for movement is continually taking place. The horizontal movement within the aquifer results from water seeking its own level by flowing from a higher to a lower level. Within Dade County the water movement in the aquifer is a few feet per day in a northwest to southeast direction.

A quantitative account of ground water in Dade County is made difficult by the great variation in hydrologic factors. The areas contributing to runoff of streams and canals cannot be determined with any degree of exactness. It is also difficult to accurately outline areas of natural ground-water discharge because those areas are constantly changing in size according to the distribution, intensity, duration of rainfall, the stage of the water table, the stage in the canals, and tidal and periodic changes in sea level.

Evapotranspiration is another factor which complicates the issue of water quantity in the aquifer. Since the water table reaches the surface in much of southeast Florida it is within easy reach of plants. The quantity of water evapotranspired thus varies widely with location, depth to water table, vegetation type, and weather conditions.

The Biscayne Acquifer is recharged over its entire surface by rainfall. Flow from Lake Okeechobee and the Conservation Areas south to Dade County via Flood Control District canals aids in the maintenance of a high water table in the vicinity of the well fields and at the coast.

During the dry season some recharging of the Aquifer from drainage canals occurs as the water seeps from these exposed areas of the Aquifer (i.e. the canals) outward into the relatively lower water table. This canal to Aquifer water exchange is opposite to that of the wet season when ground water flows laterally into the canal and is carried off to tide during times of peak canal water levels.

The recharge characteristics vary from area to area in Dade County. Miami Oolite underlies the surface of the coastal ridge from Broward County to Homestead. The oolite has a high vertical permeability, thus rain falling on the oolite surface rapidly percolates down to the water table. Within the highly urbanized area or where extensive impermeable surfaces are prevalent recharge is retarded due to the diversion of runoff directly to open channels or due to the lack of adequate retention time. A rapid rise in the water table occurs within a few hours after the rain begins if the rainfall is of sufficient intensity and duration to saturate the soil and rock above the water table.

In those areas where marls are predominate and of a thickness that they are generally impermeable, recharge to the Aquifer is slow and rain falling on the surface is either lost via surface flow or evapotranspriation . Where soils are composed of peats and mucks these materials tend to absorb the rainwaters and slowly release them to the Aquifer.

Rain falling in the Everglades recharges the aquifer until the water table reaches the surface. Additional rainfall floods the glades, and, as the stage increases, the flow into the canals and overland to the south through the glades, and to the east to a lesser extent, also increases proportionately.

The key factor in Dade County with respect to ground-water resources is the perennial yield of the aquifer. The aquifer is known to be permeable enough to yield copious amounts of water without withdrawals becoming excessive. It must be remembered that the yield of the Biscayne Aquifer is presently dependent upon the well locations and the ability of canal systems to convey water to the well field locations during times of drought. Otherwise the excessive lowering of the water table can result in salt water encroachment into the well fields.

Estimates of the volume of water contained within the aquifer were recently made in a study by Tammers, Stipp and Weiner entitled "Radiocarbon Ages of Ground-water as a Basis for the Determination of Safe Limits of Aquifer Exploitation."

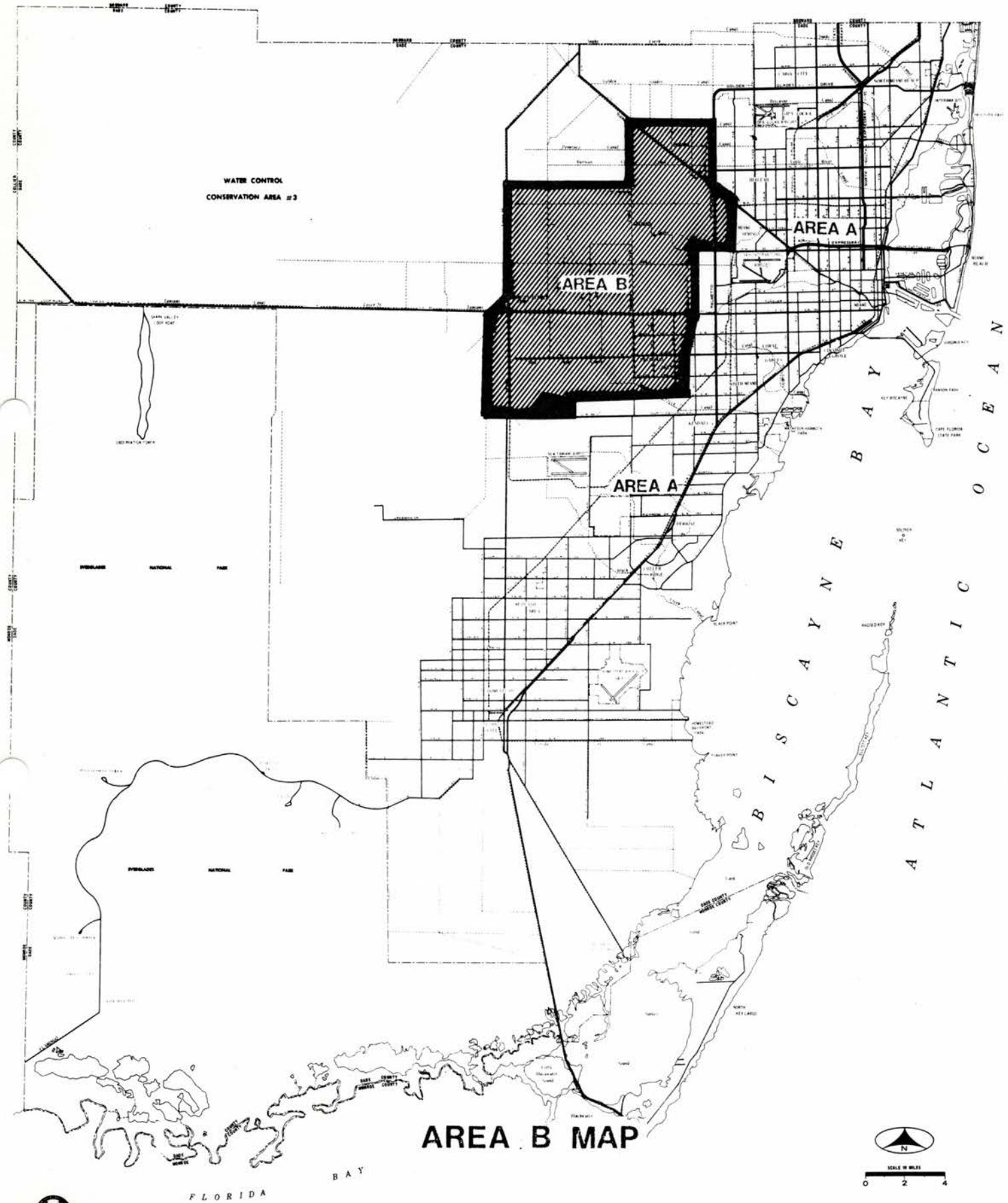
> "The aquifer contains a total of 3.4×10^{13} liters of water (1.20×10^{12} cubic feet) and is spread over an area of about 8,000 square kilometers (3089 square miles). Its deepest portions are along the Atlantic coast. the impermeable base being 30 meters (98.43 feet) below mean sea level in its northern coastal section. Nevertheless, the average water saturated thickness is only 22 meters (72.2 feet). The limestone-sand deposit thins out to a feather edge in the middle of the state (Schroedin, Klein and Hoy, 1958). Present pumpage from the system is approaching 10^{12} liters (3.53×10^{11} cubic-feet per year, Storch, 1972). The wells of the Hialeah - Preston and Orr fields, the primcipal supply units serving the Miami metropolitan population of more than a million, by themselves are producing on the order of 3×10^{11} liter (1.06×10^{10} cubic feet) per year.
>
> The Biscayne Aquifer is recharged by local rainfall, of which it is estimated that not more than 30% enters the saturated zone. The average precipitation is 1500 mm per year. (59.1 inches, which means 1.2×10^{13} liters (4.24×10^{11} cubic feet) per year falling on the aquifer.

The ground water movements are generally in a southeast direction. Infiltrating rain in the western portion of the Biscayne Aquifer is the origin of the waters that flow in the deeper layers at the deposit; the shallower waters are those that entered the ground in the eastern portion of the aquifer. All levels of groundwater are flowing principally horizontally, but with small vertical components due to more water being added continuously from the top of the entire surface of the aquifer."

The study goes on to say that water presently being exploited from the Hialeah-Preston well fields complex show radiocarbon contamination from the thermonuclear weapons testing. Therefore, it is estimated that these waters must have infiltrated underground less than 20 years ago. The fact that the waters are otherwise biologically and chemically uncontaminated (i.e. septic tank wastewaters and extensive fertilization here would be expected to have contaminated the wells), indicates that the waters have infiltrated in the undeveloped Everglades region to the West and Northwest. This statement is in part supported by the U.S.G.S. study entitled Preliminary Evaluation of the Effects of Septic Tank Effluent on Ground-water Quality, Dade County, Florida; which states that pollution of the aquifer in most cases is limited to the top 30 feet with scattered occurrences of pollution, reaching depths of 50 to 60 feet.

The value of open and relatively undisturbed lands in Sub-areas 3, 4, and 5 have been discussed in two studies entitled Hydrologic Effects of Area B Flood Control Plan on Urbanization of Dade County, Florida, and the Preliminary Evaluation of Infiltration from the Miami Canal to Well Fields in the Miami Springs-Hialeah Area, 1973. Hydrologically, Area B (see Figure 1-f) is intricately connected with the Miami Springs and Hialeah well fields through both the Miami and Tamiami conveyance canals. The Miami River Basin and its ancillary structure extends southward to approximately N.W. 25th Street. South of N.W. 25th Street is the Tamiami Canal basin. The southernmost portion of Area B feeds into the Snapper Creek canal via the Bird Road Extension canal and the Krome Avenue canal, conveying water to the Orr well fields. In the study of "The Hydrologic Effects of Area B Flood Control Plan . . . " an evaluation of flow in the Miami River during a low water period indicates that water Conservation Area 3-B contributes 33 percent of the total discharge of the Miami River, Area B provides 26 percent of the total discharge and Area A provides 41 percent. Even greater importance can be given to Area B when one realizes that much of the water within Area A during dry periods is ground-water movement from Water Conservation Area 3-B and Area B.

The efficient and safe management of the future water supply to the Miami Springs-Hialeah well fields will depend on the land use regulations imposed on Area B and the system of conveyance canals which supply water to the well field. Similiary, if backpumping of water from Area B to the water Conservation



AREA B MAP

Metropolitan Dade County Planning Department

FIG. 1-F

Area 3 becomes a reality the quality of water to be backpumped will depend on the land uses and water quality control regulations which are imposed. In a letter requested from Ed Dail, Executive Director, Central and Southern Florida Flood Control District, dated June, 1974, he states that the most favorable condition for backpumping of Area B would be a complete land use plan of the entirety of Area B (see Appendix C).

The preliminary valuation of infiltration from the Miami Canal to the Miami Springs and Hialeah well fields further emphasizes the value of the canal conveyance system passing through water Conservation Area 3 and Area B. Municipal pumpage from the Hialeah and Miami Springs well fields generally averages 100 million gallons daily (mgd). Pumpage fluctuates seasonally and is greatest between December and May. Peak day pumpage usually attains a maximum during April or May with daily pumpage approaching 120 million gallons.

Part of the water pumped from the Miami Springs and Hialeah well fields is obtained either from rainfall which has percolated into the aquifer or by infiltration from conveyance canals. The part obtained from rainfall is usually greatest during the wet season (June - November), and that obtained from canals is usually greatest during the dry season (December - May). Canal infiltration is especially important to the Miami Springs and Hialeah well fields because pumpage from the well fields is at a maximum when rainfall and percolation are at a minimum.

The infiltration from the Miami Canal into the Aquifer during 1970 was about 46.5 mgd, or 52 percent of the pumpage. The contribution for 1971 was computed to be 50.7 mgd, or 55 percent of the pumpage. During times of low water or drought, canal infiltration may approach 80 percent of the total water pumped. The analysis indicates that canal infiltration is increasing in response to increased pumpage, at least on a yearly basis. However, the critical test occurs during droughts when increasingly higher peak pumpages could exceed the canal's ability to supply adequate recharge to the aquifer to preclude inflow of inferior water from the tidal canals or to cause mining of the aquifer. An evaluation of the infiltration study further states that the maximum development of the Biscayne Aquifer in the vicinity of the well fields will depend chiefly on adjustments in the location of canals (recharge boundaries), ability to maintain high heads in the canals, and possibly increase canal infiltration by deepening canals or removing botton sediment. However, deepening canals or removing of bottom sediment may be undesirable because of the absorptive and filter effects of the sediment on the quality of water that recharges the aquifer.

A final concern which must be addressed is that of maintaining land use controls adjacent to the conveyance canals. Major canalways such as the Miami Canal influence ground water movement as far back as one-half mile from their

banks, depending on the depth of the canal, permeabilities of adjacent rock formations, and the seasonality or fluctuation of the water level. Hence, land uses which may impact water quality such as residential areas utilizing septic tanks, package treatment plants with soakage or seepage pits, industrial discharges, and construction activities which could cause increased sedimentation should be avoided whenever possible.

Because of the interrelationships between surface and ground-waters it is important that the planning of development in Area B not preclude the utilization of this area as both a quantity and quality control of waters entering into the Biscayne Aquifer. Sub-areas 1 and 2 are not only important as they are interrelated with ground-water flow and movement in South Dade County but also they are important because they provide the passageway or basin for the overland sheet flow of water into Everglades National Park. Taylor Slough provides water to Royal Palm Hammock, visitors center, the focal point of the Park. The northern portion of Sub-area 1 is the Shark River Slough, the historic drainage basin for water moving southward into Florida Bay. Their value as wildlife habitat areas is discussed more completely in the Sub-area descriptions of vegetation and wildlife.

While still basically functioning as they have in the past, the surface and subsurface water systems have been dramatically affected by man-made facilities in adjacent areas. These facilities have adversely affected the quantity, the timeliness, and the distribution of water in the study area from an environmental viewpoint.

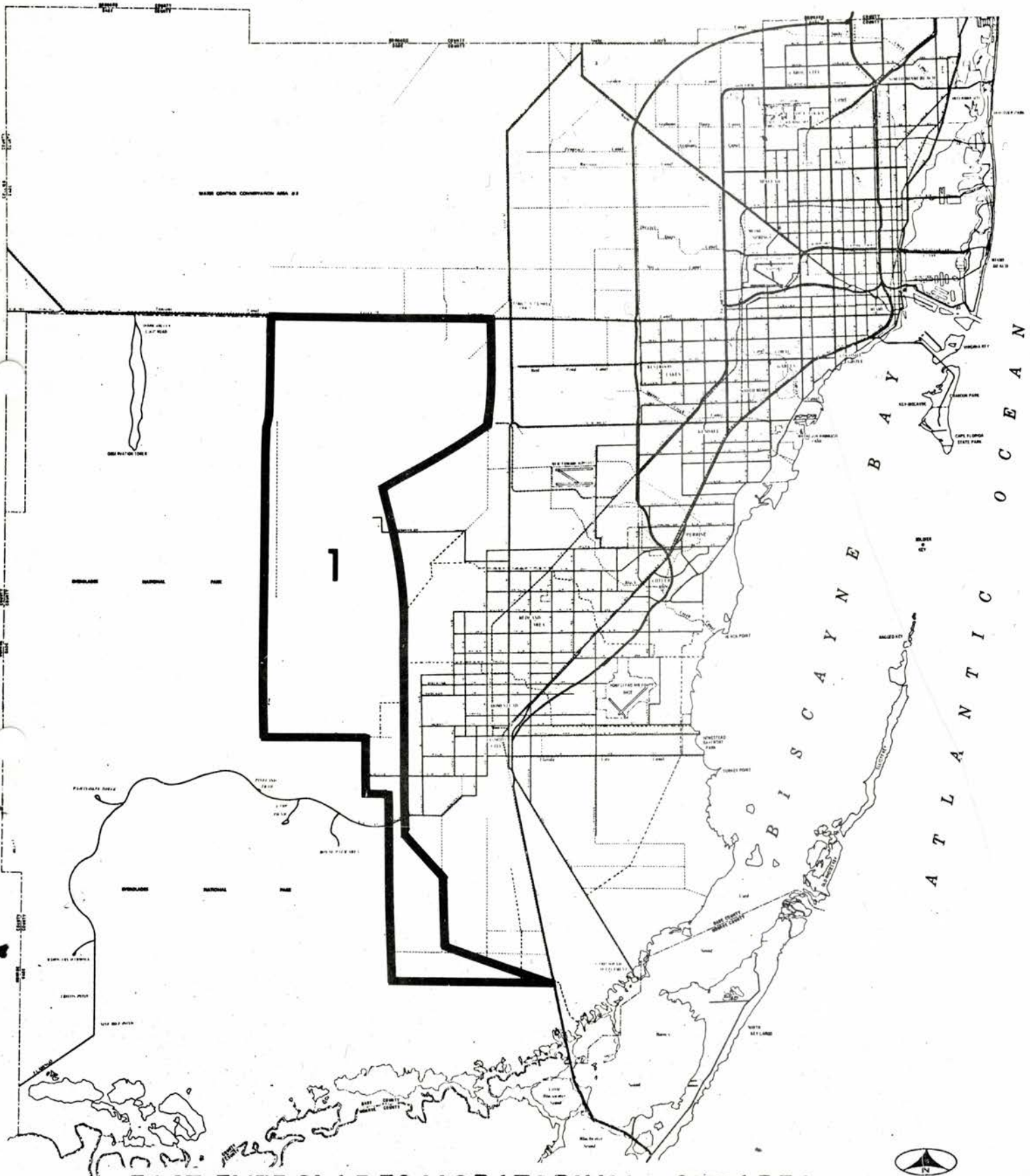
The level of the water table depends on the amount of sub-surface water which in turn depends on water available from the surface water system. Since World War II the growing population in southeast Florida has placed continually greater demands upon the subsurface systems for supplies of potable water. While the demands for additional potable water supplies have increased, so also have demands for greater surface drainage and elimination of "unnecessary" surface water which in actuality provides aquifer recharge. These two divergent courses of action are destroying the delicate interdependency of the two water systems. The consequences of following them simultaneously have been a steadily lowered water table, saltwater intrusion, land subsidence, and oxidation of highly organic soil which has been deprived of its natural water content. The long term effects of this means not only the destruction of the natural area, but also the loss of important resources that will greatly affect Florida's future.

VEGETATION AND WILDLIFE

Historically, the major biotic communities found within the East Everglades Moratorium Area were wet prairies, sawgrass marshes, and the tree-island everglades. The wet prairies, comprised of spike rush, beak rush, bulrushes, and maiden cane were in association with a peri-phyton algal mat and lay in the shallow marl soil west of and adjacent to the Atlantic Coastal Ridge. The sawgrass marsh dotted with numerous tree islands, willow heads, and bayheads, formed the deep organic peat soils further west where inundation occurred for longer periods during the wet season. In portions of the Everglades Basin, where sawgrass peat built up above the seasonal water level and where limestone outcrops afforded some protection from inundation, temperate and sub-tropical trees established, forming the tree island everglades. known today as the Shark River and Taylor Sloughs.

Large populations of wading birds, mammals, amphibians and reptiles became established within the area, encouraged by the diversity of food and protective cover afforded by the sedge and tree-island communities. However, all organisims of the area were limited in distribution and numbers by the periodic occurrances of drought, fire and flood, and have adapted to the normal extremes of these natural factors. Reproduction cycles, feeding, the survival techniques of the organisms, and indeed the severity of natural factors bearing upon them were dictated by the depth, timing and duration of the rising and falling waters in the Everglades Basin.

A more detailed analysis of vegetative and wildlife resources are presented in the descriptions of Sub-areas in the subsequent part entitled Environmental Analysis.



EAST EVERGLADES MORATORIUM SUBAREA 1

FLORIDA

Metropolitan Dade County Planning Department

FIG. 1-G

INTRODUCTION

This part of the study is concerned with the environmental elements of each of Sub-areas 1, 2, 3, and 4. Discussed for each Sub-area are the major soils which are predominate within the area; a description and assessment of the vegetative and wildlife character of each area; a discussion of the water resources and availability of flood protection within each Sub-area; and an analysis of the past and present impacts of man's activities.

SUB-AREA 1

Boundaries

Sub-area 1 contains approximately 223 square miles including the Shark River Slough and Taylor Slough areas adjacent to the Park (see Figure 1-g). Its northern boundary is the Tamiami Canal, and the western boundary is Everglades National Park. To the south it is bounded by the northern boundary of the Park's panhandle area, and on the east by C-111 and L-31-N.

Soils

Sub-area 1 is the largest of the Sub-areas under consideration and consequently it exhibits a variety of soil types. The southern portion of this area is made up primarily of the different phases of Perrine marl. The central area is dominated by Rockland and Rockdale soils (limestone complex). The northern portion, i.e., Shark River Slough, is composed predominately of Loxahatchee, Everglades and Gandy peat. Perrine marl was derived from unconsolidated finely divided calcareous sediments that are mainly of fresh-water origin. The areas of this soil are nearly flat and only a few feet above sea level. The soil is poorly to very poorly drained and is inundated for the greater portion of the year.

The surface layer of Perrine marl ranges from light brownish gray to dark grayish brown in color and from 6 to 10 inches in thickness. In a few low-lying areas, a very thin layer of partly decomposed organic matter covers the surface. The second layer varies from light brownish gray to light gray in color and from 6 to 20 inches in thickness. The third layer may exhibit a few small pale yellow mattings within the light gray color. The depth to the limestone ranges from 24 to 72 inches. The native vegetation of this soil is sedges and tall grasses, mainly switchgrass, reedgrass, needle grass, and sawgrass.

Other phases of Perrine marls present include the shallow phase, the very shallow phase and the Perrine marl with a peat substratum. They differ from the Perrine marl described above in that the depths to the limestone vary from several to 24 inches in depth. The Perrine marl peat substratum phase is located in the extreme southeastern portion of Sub-area 1 and differs from the typical marl by having a 12 to 48 inch layer of brown fibrous organic material between the surface layer of marl and the underlying limestone. Where the marls are less than 24 inches thick they are usually highly permeable; however, once they exceed 24 inches they become somewhat impermeable and internal drainage of these soils becomes poor.

The central part of Sub-area 1 Taylor Slough Basin, is dominated by Rockland soils. This type of soil consists of extensive areas of Miami Oolite or of Tamiami Limestone that have a very thin covering of unconsolidated soil material in places. It occurs between areas of the Loxahatchee peats and the Rockland soils. This land type in the eastern part of the County supports various grasses and sedges whereas in the western part slash pine and cypress may also occur.

Also occuring in the central and western-central parts of Sub-area 1 is the Rockdale fine sandy loam, level phase-limestone complex. This complex is associated with the Perrine marls and Rockland soils. There are numerous places where the pourous limestone is exposed. Many small cavities or solution holes are filled with a mixture of light-gray fine sand and brown clayey limestone residue. These cavities range from 2 to 24 inches in depth. Generally slopes are between 0 to 2 percent. Drainage, both external and internal is good. The surface layer varies from dark grayish brown to brown in color. In places the texture of the surface soil is a clay loam. In many areas the brown surface layer rests directly on the limestone or is entirely absent. The native vegetation consists of slash pine, saw-palmetto, and various subtropical plants. Live oak, palm, and other subtropical trees occur on scattered hammocks.

Two main classes of soils predominate the northern section of Sub-area 1. These are the Loxahatchee peat plus its variations and the Everglade peat shallow phase over shallow marl. Loxahatchee peat occurs in the northeastern segment of Sub-area 1 and is associated with the Gandy and Everglades peats. This soil has 36 to 60 inches of very spongy fibrous material composed of the remains of succulent aquatic plants. The organic materials, covered with water during the greater part of the year, rests directly on limestone. The surface layer varies from grayish-brown to reddish-brown. The native vegetation is lily, bonnet, arrowhead, pickerelweed, bladderwort, sedge, hyacinth, and some clumps of sawgrass.

Comprising almost the entire northwestern portion of Sub-area 1 is Loxahatchee peat, shallow phase over shallow marl. This soil differs from Loxahatchee peat mainly in having less than 36 inches of organic material and in having a 6 to 24 inch layer of marl overlying the limestone.

Everglades peat, shallow phase over shallow marl also occurs in the northeastern section of Sub-area 1 and generally lies south of the Loxahatchee peat. This soil occurs in association with the other Everglades peats and with the Loxahachee peats. It differs from the Everglades peat chiefly in having a peat mantle less than 36 inches thick that is separated from the underlying limestone by a thin layer of marl. The marl layer ranges from a few inches to 24 inches in thickness.

Finally, Gandy peat, shallow phase occurs in limited area; extemt scattered throughout the central and northern sections of Area Sub-area 1. It is on the bay (laurel) and myrtle islands surrounded by fresh-water marsh vegetation. The islands probably started as floating masses of vegetation in the marsh. They eventually became anchored, stabilized and covered with a woody vegetation of bay and myrtle. These islands are from 1 to 3 feet higher than the surrounding marsh, which is covered with water during the greater part of the year. The marsh consists of Loxahatchee peats. On some of the higher islands the upper 12 to 24 inches of the Gandy peat may be moderately well drained, but the lower part of the profile may be saturated with water.

The native vegetation includes white bay, myrtle bushes, small rubber trees, ferns, and some sawgrass along the edges of the areas. The upper part of the soil profile is partially decomposed leaves and stems from the trees and shrubs. The lower part appears, in places, to be the remains of bonnet, lily, bladderwort, arrowhead, some sawgrass, and other aquatic plants.

Water resources and Flood Protection

Historically, many portions of this area remain wet or partially inundated year-round. The Perrine marls, Everglades and Loxahatchee peats are all characterized by their seasonal inundation. Rockland, Rockdale, and Gandy peats historically were seasonally inundated, however, the drainage and water management activities have affected the seasonality, duration, and levels of inundation within these sloughs. As indicated in the Environmental Character section discussion on drainage, water levels within these areas may historically have been 5 to 6 feet above the present elevations. When such levels were reached, overflow to the east into Biscayne Bay occurred through the transverse glades now characterized by canals such as Snapper Creek and Black Creek.

The Taylor Slough Basin's value lies in its importance as a source of freshwater that enters the eastern portion of Everglades National Park. This water, which flows southward across Flamingo Road, is crucial to the major attraction of the Park -- Royal Palm Visitor Center. Here are alligator holes, marshes, and a tropical hardwood hammock. Taylor Slough Basin is also essential to the maintenance of viable habitat areas for wildlife in the eastern portion of the park. The vegetation and the variety of fauna in this area depend on this water for survival.

As with the other preservation zones this area is crucial to the maintenance of the viable functioning Everglades ecosystem. Thus, the range of alternative uses of the area should include water preserve, hunting and fishing area, camping use, nature study, or other passive recreation uses that would not interfere with the viability of the basin. Residential use with specific restrictions including a minimum of 5 acres per house, special structural considerations to allow water flow, and strict regulations on handling wastewater will be evaluated under an Environmental Impact Statement.

The basin is now characterized by some significant conflicts between a range of compatible uses and actual or proposed uses in the area. First, the nearby agricultural activity poses little threat to the water quality of the slough from pesticides or fertilizers. However, any significant expansion of agriculture into the basin could severely affect the water quality and threaten the existence of fauna and flora in the slough.

Another potential land use conflict in the Taylor Slough Basin is posed by Aerojet Corporation which presently owns a significant amount of land already zoned for industrial use. The ultimate expansion of Aerojet's facilities or the development of other industrial use could result in the scarification of large land areas and the accompanying loss of native vegetation and wildlife inhabitating the area. The influx of people and automobiles with industrial expansion could result in numerous adverse environmental impacts including water, air, noise, and solid waste pollution.

The northern portion of Sub-area 1 consists primarily of the Shark River Slough. The primary impacts of concern affecting this Sub-area are located on the borders. Thus Levee 29 and the Tamiami Trail on the north have interrupted sheetflow which historically flowed across Conservation Area 3, through the northern section of Sub-area 1 and into Everglades National Park. Some water still overflows from Conservation Area 3 but the flow is not significant. As was the case in the discussion of the Taylor Slough Basin, L-31-N also forms an artificial boundary on the east for the Shark River Slough. The higher elevations of the coastal pine ridge historically formed the eastern boundary.

As indicated in an earlier section of this report, the water resources are intricately connected to the ground-water system. The Rocklands, Rockdale, Loxahatchee, Everglades, Gandy peats and shallow phases of the Perrine marls are all highly permeable. Loxahatchee Everglades and Gandy peats expand upon becoming inundated, absorbing tremendous quantities of water and then slowly releasing them to the underlying aquifer. Despite attempts to drain the Everglades basin this Sub-area has little or no flood protection offered to it by the system of flood control levees and canals. It is probable that L-31-N and C-111 affect the area immediately adjacent to the canal bunks but otherwise flood control is nonexistent.

Vegetation and Wildlife

Sub-area 1 is characterized by its most prevalent natural features, the upper portion of the Shark River Slough, the drainage basin of the Taylor Slough, and the fresh water swamps bounded by L-31, C-111, and the Park boundary. Here may be found tropical hardwood hammocks, willow and bay heads, sawgrass swamps, and wet prairies, in varying combinations.

Upper Shark River Slough is characterized by lenticular tree islands, willow and bay heads, molded by the geology and water flow of the area. Interspersed between these hardwood areas are sawgrass swamps and spike rush marshes. Along the eastern boundary of the slough, where limestone outcrops are more frequent, the tree islands become circular in appearance.

Historically, many portions of the area remain wet year-round, except during the most severe drought years. Hardwood tree species, intolerant of fire and long periods of inundation, established on the deep accumulations of organic soil and rock outcrops extending above the slough water level. The sedge and grass communities found habitat on the organic and marl soils which were subject to longer inundation. As long as these soils remained moist during droughts, the root systems of the grasses and sedges were protected from fire and the plants survived.

Drainage and water management activities have affected the seasonality, duration, and levels of inundation within the slough. These changes have in turn induced changes in the areas vegetation. Accompanying the recent drainage in dry years, fires burned long tongues, into the drier organic peats. Here rhizomes of the sawgrass were killed, and peats were destroyed that once formed a great water reservoir. Now bare marl and rock form the bottom of these depressions, which when filled with water are largely choked with water lilies and other submerged aquatics. Willow, an invader of disturbed sites, has increased enormously in the past thirty years. It has taken over much of the marl soil underlying sawgrass and bayheads because of the oxidation of peats accompanying the receding water and fire.

The southern one-third of Sub-area 1 is quite typical of the fresh-water Everglades. Sawgrass communities have developed over the deepest accumulations of organic soils or marl. In areas where fire has removed the peats, exposing the marl soils, communities of beak rush, spike rush, fringe rush, spider lilies and panic grasses have replaced the sawgrass. Bayheads and willow heads are found throughout this area but also include buttonwood and paurotis palm as the saline mangrove zones are approached. Along the southern boundary of the area, numerous creeks lined with buttonwood and red mangrove emerge and flow toward Florida Bay. Perhaps the most unusual vegetation found in the area are the clumps of red mangrove established over organic-filled solution holes. Appearing like large spiders dotting the grass and sedge communities, these mangroves have been pushed into the fresh water areas by hurricane winds and flooding.

The southern half of this area is especially important for the freshwater flow it provides into the estuarine areas further south. Much of the coast to the south acts as remnant viable habitat for the American crocodile, Florida manatee, and numerous food fishes supporting sport and commercial fisheries. During certain seasons of the year, wading birds from the Park utilize the coastal area as an alternate feeding ground when water levels within the Park become either too high or low for feeding within the park.

Impacts of Man's Activities

Sub-area 1 is the only part of the moratorium study area which is a designated Preservation Zone. Preservation Zones are the most environmentally sensitive areas and it is the natural character and viability of the ecosystems within this Sub-area which determines the classification. Thus organic soils, which are not suitable for urban development, a high water table and accompanying sheetflow, and high quality native vegetation with associated wildlife characterize this natural area.

Although impacts within Sub-area 1 are not as significant as in adjacent areas to the east, many disruptions of the natural systems are evident. The major change affecting Sub-area I is the establishment of an artificial water management system. In the southern portion of Sub-area 1 within the Taylor Slough Basin, the construction of several canals and levees have had some effects on the hydrology. That is, L-31-North and Canal 111 have created an artificial boundary to the east where formerly the slightly higher elevations of the coastal pine ridge formed the natural eastern boundary of the basin. A similar impact was created by L-31 west just north and south of Ingraham Highway. A proposed project to convey more water into the Taylor Slough Basin by diverting water from water Conservation Area 3 through the expansion of L-31-N is in the planning stage.

The combination of aquatic and terrestrial factors found in the Shark River Slough, make it valuable for wildlife habitat. Small fish such as sailfin, molly, flagfish, and sheepshead minnow, provide nourishment for larger fish, amphibians, reptiles, wading birds, and mammals. Wading birds like the American bittern, green heron, little and great blue herons, wood ibis, and cattle egrets might easily be found and mammals such as deer, bear, panther, raccoon, otter, and water rat frequent the area. Possibly the most important animal of all is the American alligator inhabiting the deeper sloughs and ponds. The well documented "alligator hole" plays a vital role in the survival of most other reptiles, mammals, birds and aquatic life during times of drought.

The central zone of Sub-area 1 is the origin of the drainage pattern for Taylor Slough following through Everglades National Park toward Florida Bay. This area supports a predominance of sawgrass, and wet prairie communities, intermingled with willow heads. The only indications of man-made changes in this area are the approximately two square miles of agricultural use along the eastern boundary and segments of the newly developed Context road. Both activities have removed native vegetation in varying degrees. The consequence of these activities may well be the inadvertent establishment of willow and exotic species such as Melaleuca, Austrailian pine, and Brazillian pepper upon the disturbed soils.

The upper drainage basin of Taylor Slough is a seasonally important feeding ground for many wading birds nesting within Everglades National Park. Such feeding becomes especially heavy in the fall and early winter of wet years. However, the chief importance of the area lies in the flow of water provided to Taylor Slough and its downstream estuaries which are breeding sites and feeding areas for major wildlife resources. Taylor Slough and its associated estuarine areas support over 90 percent of the American crocodiles and Cape Sable sparrows in the United States; more than 50 percent of the nesting egrets and roseate spoonbills in Florida; and approximately 50 percent of Everglades National Park's nesting wood storks. In addition, significant populations of brown pelicans, great white herons, bald eagles, ospreys and more common water birds occur within the boundaries of the slough. Appreciable sport and commercial fisheries rely in part on the water flowing from Taylor Slough into Florida Bay.

Levee L-67 extending south from Tamiami Trail along the eastern boarder of Everglades National Park, has also affected the flow of water into the Park. However, the flow reduction is not significant since water still flows from Shark River Slough around the southern end of the levee and into the Park.

A number of water control facilities previously slated for the northern section of Sub-area 1 have recently been deactivited by the Flood Control District. Although the effects of canals and levees crossing the Shark River Slough could have been drastic, it appears that these projects will not be revived. Any efforts to reinstate these projects should not be supported by the county.

Changes in the hydroperiod within Sub-area 1, due to the effects of the water management system, have resulted in increased burning in some areas which has destroyed developing willow heads and disrupted wildlife movement. If the character of the area is to be protected careful management practices must be enforced.

SUB-AREA 2

Boundaries

Sub-area 2, consisting of approximately 22.5 square miles, is bounded on the north by the approximate boundary of the Shark River Slough, on the west by the approximate boundary of the Taylor Slough, and on the south and east by Levee L-31-N (see Figure 1-h).

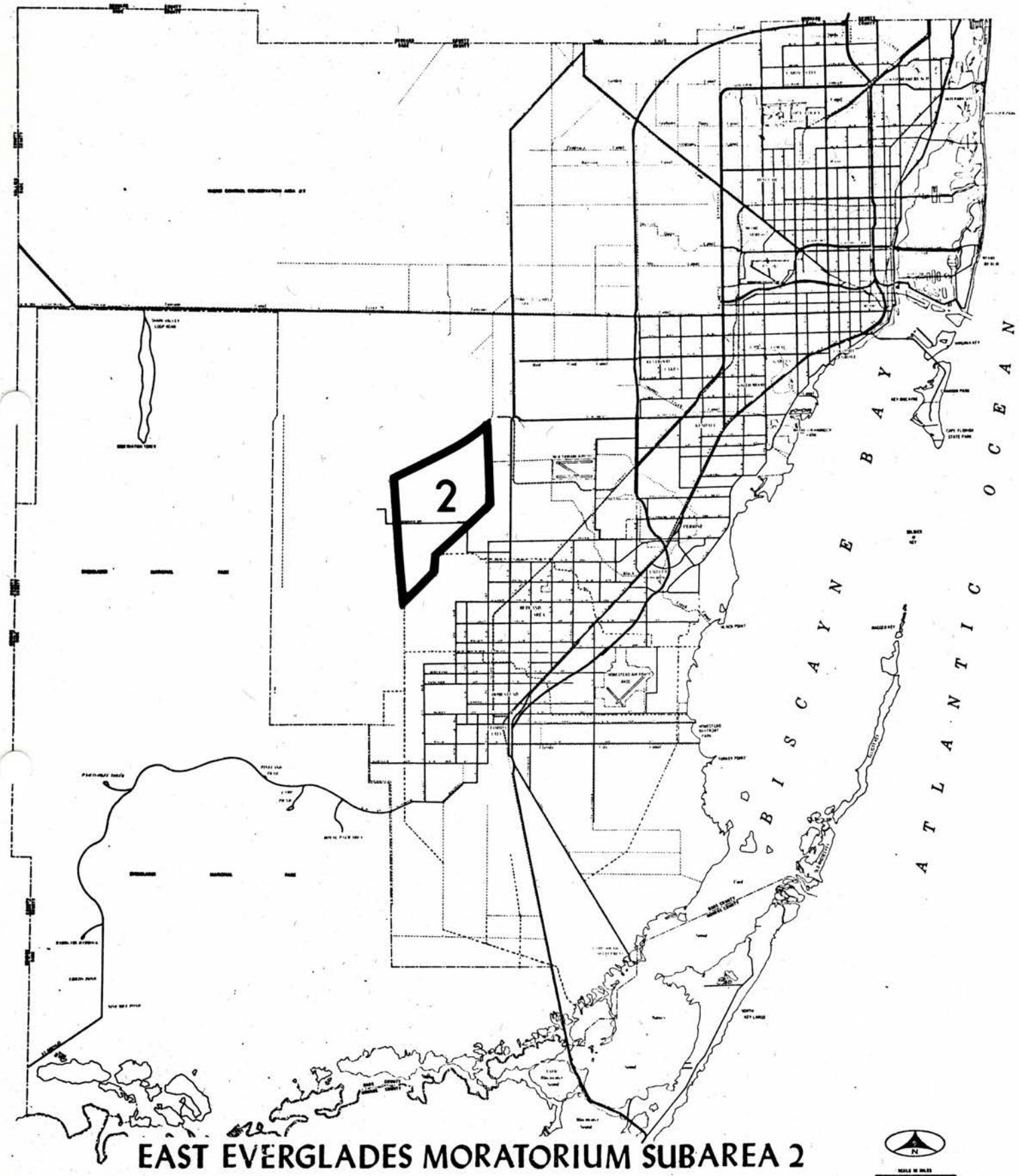
Soils

Sub-area 2 consists almost entirely of Rockland soils with a strip of Perrine marl, very shallow phase, occuring in the eastern portion. Both these soil types are discussed in the soils section of Sub-area 1 and will not be repeated here.

Water Resources and Flood Control

Sub-area 2 is not as important hydrologically as is Sub-area 1, however, it is still important as it relates to the Biscayne Aquifer. Ground-water, that is, water percolating into the Aquifer, is important as it helps to maintain necessary water table gradients to the east. The Rockland soil types lying within this area are characteristically rapidly permeable; thusly, waters falling upon this area rapidly percolates down into deeper portions of the aquifer. Surface drainage to the east is effectively intercepted by Levee 31-N.

Flood control to this area is virtually nonexistent as is the case in Sub-area 1. The little control offered is immediately adjacent to L-31-N. However, during heavy rains this area is partially inundated as the water elevations increase due to the inadequacies of drainage facilities.



EAST EVERGLADES MORATORIUM SUBAREA 2

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FIG. 1-H

Vegetation and Wildlife

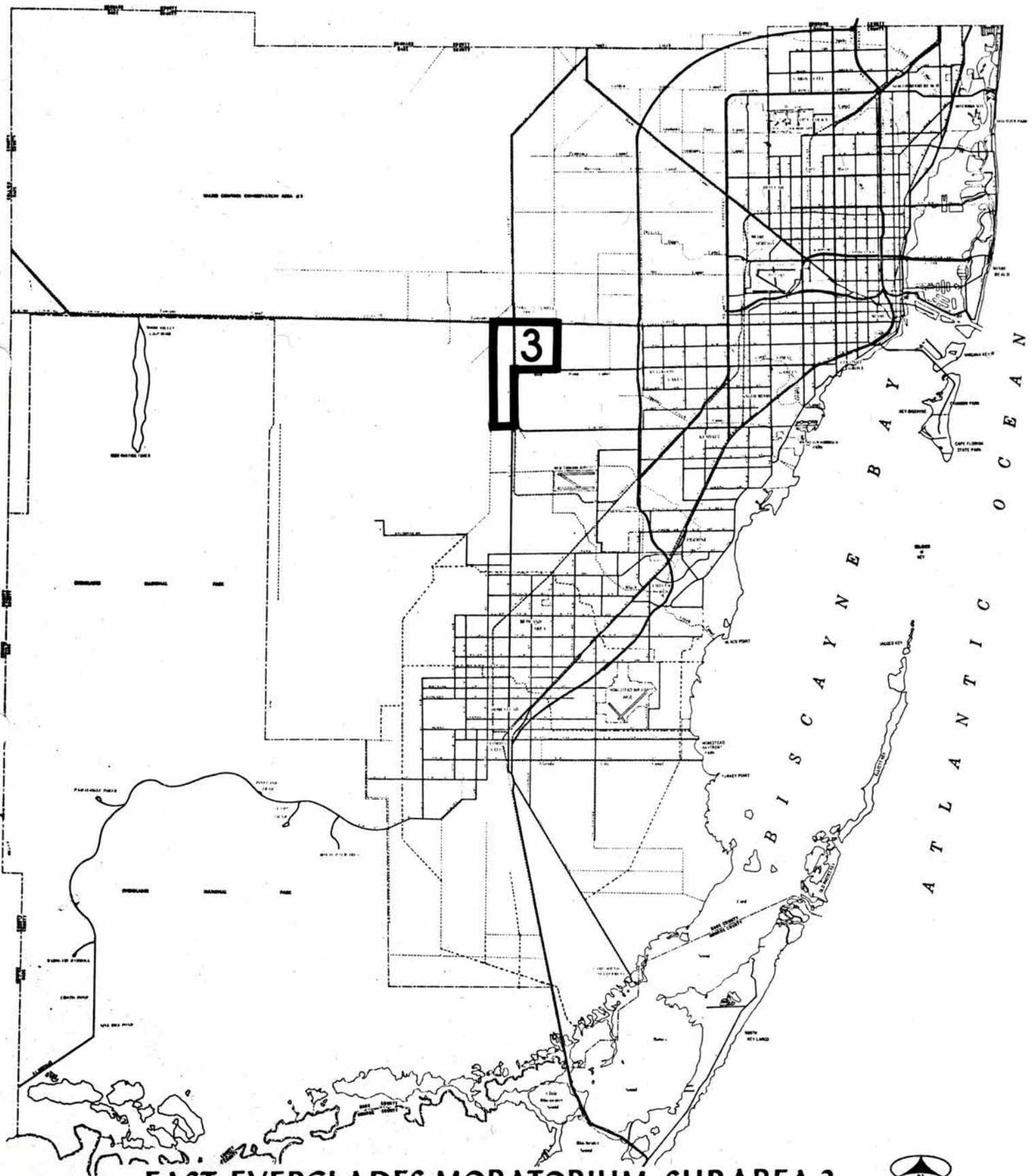
As a transitional zone between the Atlantic Coastal Ridge and the Everglades, this area was a unique mixture of hardwood hammocks, patches of pine, and sawgrass marshes. The frequent occurrence of fire and conversion to agriculture has virtually eliminated all stands of pine and much of the sawgrass leaving hammocks on the rock outcrops and bayheads and sawgrass in the sloughs and low ground along the western half. Abandoned fields and road sides are rapidly being invaded by ragweed, dog fennel, sida, willow, goldenrod, elderberry, and Brazillian pepper.

Populations of wildlife distinctly differ from those in the Shark River and Taylor Sloughs because of the abundance of disturbed land. Mammals are limited to raccoon and oppossum and occasionally deer near the hardwood islands and rabbits in the open fields. Seasonally the deeper sloughs might possibly attract alligators, Florida box turtles, the Everglades bullfrog, and some species of wading birds. Open agricultural land devoted to herbaceous crops support killdeer, common nighthawks, meadow larks and red-winged blackbirds. Old abandoned fields attract a variety of species including swallow-tailed kites, marsh hawks (winter), short-eared owls (winter), and tree and barn swallows.

Impacts of Man's Activities

Sub-area 2 is the same area as the Rocky Glades Conservation Sub-zone delineated in the Environmental Protection Guide. The major impacts within the sub-area are effects on the hydrology from water control facilities and impact on the area from over 100 small ranches where minor agricultural use and the construction of homes and roads have scarred the surface. Inundation within the Sub-area resulting from the rising water table, has been diminishing in recent years. This may be due to increased withdrawals or diversions upgradient (Conservation Area 3B), improved outlets downgradient (C-111 and L-31 North, natural climatic conditions, or a combination of these factors.

The numerous small farms with accompanying access roads north of Grossman Hammock State Park have been the major impact on the area. Although agricultural use is presently limited due to a lack of drainage facilities, the creation of land which is hydrologically suitable for agricultural uses would disrupt ground-water gradients throughout Shark River Slough and in the Taylor Slough Basin. Moreover, widespread application of pesticides and fertilizers create serious water quality problems especially when rising water tables cause overflow to the south and east in Taylor and Shark Sloughs.



EAST EVERGLADES MORATORIUM SUBAREA 3

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FIG. 1-I

SUB-AREA 3

Boundaries

Sub-area 3 is bounded on the north by the Tamiami Trail, on the west by L-31-N, an irregular boundary on the south by theoretical boundary of North Kendall Drive, Krome Avenue and the Bird Road extension canal and on the east by theoretical 157 Avenue. This Sub-area consists of approximately 8 square miles (see Figure 1-i).

Soils

The soils of Sub-area 3 are primarily an extension of the various soils of Sub-area 1. Everglades peat, shallow phase over shallow marl is the dominant type, occuring through all of the central area. Loxahatchee peat is present in the northwestern section and there is a small areal extent of Rockland soils in the southern area.

As indicated earlier, Everglades peat has developed from the remains of sawgrass, lily, sedge, and myrtle. It is closely associated with the Loxahatchee peats but differs from them mainly in having a black or very dark brown nonfibrous peat surface layer. Everglades peat is poorly drained and may be covered with water during many months of the year. The surface layer varies from 6 to 18 inches in thickness. The limestone underlies the peat layers at depths ranging from 36 to 60 inches.

Water Resources and Flood Control

This sub-area was historically within the easternmost portions of the Shark River Slough. The construction of the Tamiami Canal, Krome Avenue Canal, Levee L-31-N, and the Bird Road extension canal have effectively cut off any sheet-flow through this portion of the slough.

Surface flow to the east is provided by both the Tamiami Canal and the Bird Road extension canal. The Bird Road extension canal is an important contributor to Snapper Creek canal which is intricately connected to the John B. Orr well fields. Its connection to the ground-water system is similar to that described for other portions of the aquifer. The Everglades and Loxahatchee peats are highly permeable and extremely valuable as discussed in other portions of this report.

Flood control within this Sub-area is probably greater than any of the other areas; however, during heavy rains this area still becomes inundated. There are proposals to move Krome Avenue Canal approximately three-fourths of a mile to the east if backpumping of Area B becomes a reality. Connector 5 to the Tamiami Canal would be made, increasing the flood control capabilities within this area.

Vegetation and Wildlife

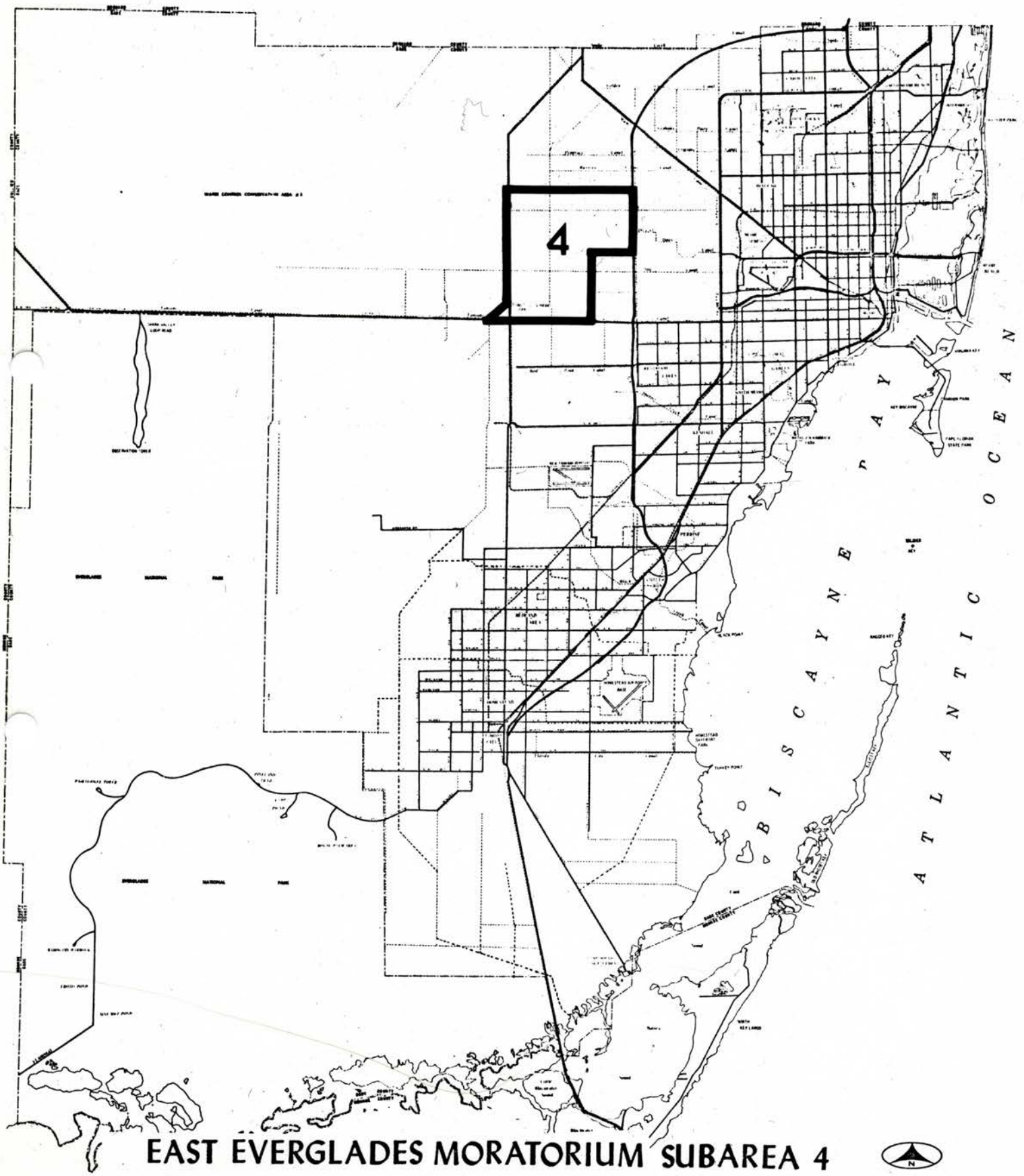
Previously covered with sparse to medium dense sawgrass marshes, with scattered willow heads on the edge of Shark River Slough, much of this area has been impacted by drainage and fire. The destruction of organic soils and the subsequent exposure of marls has caused stunted sawgrass stands to develop, intermingled with rushes and grasses. Canals transversing the area have encouraged the introduction of willow, Brazillian pepper, buccharis and other plants typical of disturbed areas.

Wildlife in the area is limited but could include marsh rabbit, raccoon, green heron, least bittern, mottled duck, king rail, common gallinule, purple gallinule, yellow-throat, red-winged blackbird and boat-tailed grackle.

Impacts of Man's Activities

This Sub-area is presently designated as a Conservation Zone in its western portion and a Submarginal Zone in its eastern portion. This Sub-area was formerly on the eastern edge of the Shark River Slough; however, L-31-N and Tamiami Trail have effectively stopped sheetflow across the area. Though the Sub-area is west of the region of effective flood control offered by the Florida Flood Control District and Dade County Public Works Water Control Division, some lowering of the water table has taken place. The lowered water table in this formerly wet prairie has created conditions whereby oxidation and burning of the formerly inundated organic soils has taken place. Moreover, the influx of exotic plants has been common and is threatening the continued existence of the wet prairie. Major impacts, therefore, in Sub-area 3, east of Krome Avenue, are limited to hydrologic changes, subsequent vegetative changes, and a few minor roads in the northern edge of the Sub-area.

Major man-made impacts west of Krome Avenue and east of Levee L-31-N in Sub-area 3 include the following areas of concern. One major industrial impact is posed by the Portland Cement Plant located just west of Krome Avenue. The only other major impact on the natural environment in this area is a Nike missile site and an Army installation. In addition to these obvious area's location east of the levee indicates that the hydrology has been altered from the natural system. Thus the lowered water table, the burning of organic soils, and the invasion of exotic plants also characterize that portion of Sub-area 3 west of Krome Avenue. Due to this area's present connection to the John B. Orr well fields and its potential connection to the proposed backpumping project it is important that land use regulations within this area protect both the present and future quality of water.



EAST EVERGLADES MORATORIUM SUBAREA 4

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Metropolitan Dade County Planning Department

FIG. 1-J

SUB-AREA 4

Boundaries

This Sub-area is bounded on the north by N.W. 90th Street, on the west by Levee L-30-N, on the south by the Tamiami Canal, and on the east by an irregular boundary delineated by theoretical 157th Avenue, and the Homestead extension of the Florida Turnpike. This Sub-area consists of 59 square miles (see Figure 1-j).

Soils

Sub-area 4 is comprised almost entirely of Everglades peat. There is some Everglades peat, shallow phase over shallow marl in the eastern and southeastern sections and also some Loxahatchee peat in the western and southwestern areas. These soils have already been described in Sub-area 1 and will not be repeated here.

In addition, a small extent of Loxahatchee peat, deep phase, occurs in the southwestern area. This soil differs from Loxahatchee peat mainly in having an organic layer that ranges from 60 to 96 inches in thickness. It occurs in the deepest part of the slough in the Everglades basin.

There is also a small areal extent of Everglades peat, shallow phase in the northeastern part of Sub-area 4. This soil differs from Everglades peat chiefly in having limestone at depths ranging from 12 to 36 inches.

Water Resources and Flood Control

The value of this Sub-area as it relates to the water resources of Dade County has been partially discussed in the portion of this study entitled the Biscayne Aquifer. This area would also be an essential part of proposed backpumping plans and again it is important to reemphasize the need for land use regulations which would protect both the quality and quantity of water.

Flood control is minimal within this area. Area B is a saucerlike basin with ground elevations between 4 and 8 feet above mean sea level. As part of the historical eastern boundary of the Shark River Slough sheetflow to the south and southwest occurred prior to the construction of Levee L-30-N, the Dade-Broward levee, and the Tamiami Canal. Due to its position between water Conservation Area 3-B to the west and the higher Atlantic Coastal Ridge on the east, water tends to accumulate within the basin. The area is seasonally inundated with exceptions of the higher tree islands. The Dade-Broward Levee, although it is not presently maintained, tends to keep water levels at elevations one to one and a-half feet above that of the area to the east during the rainy season. Elevations become more nearly equal during the dry season when the locks on the Tamiami Canal are opened. Presently, flood control criteria west of the Dade-Broward Levee are set at 9 feet with the elevation to the east set at 8 feet.

Vegetation and Wildlife

The historic native plant communities in this Sub-area are identical to those in Sub-area 3. However, the influence of the Dade-Broward Levee in maintaining different water levels on its east and west sides has induced recognizable differences in vegetation. The dryer east side exhibits a higher frequence of willow, shrubby growth, and invasion by Melaleuca. Moving eastward, Melaleuca forms extensive biologically sterile stands, devoid of any understory, and supporting little if any wildlife. While willow is found along the west side of the levee, sawgrass and rushes form the predominant vegetative cover.

The majority of wildlife will be found along the border of the levee and within the remnant wetlands to the west. Most of those wildlife species found in Sub-area 3 will likewise occur in this sub-area. In addition, due to the seasonal variation of water levels, the potential for feeding habitat by the Everglades kite can not be overlooked due to the presence of the apple snail (Pomacea).

Impacts of Man's Activities

Sub-area 4 comprises the southern part of Conservation Sub-zone Area B of the Environmental Protection Guide. As is Sub-area 3, it is also a former wet prairie which has been partially drained. Some burning of the organic soils has taken place, and some invasion of exotic plants characterizes the area. However, the sawgrass which formerly dominated the wet prairie is still prevalent except where man-made impacts have occurred. Other major impacts are few and presently include only the Leheigh Cement Plant located in Section 53-39-34 and its associated rock pit. Another small rock pit is located within Section 53-39-13. A final impact is posed by the Trailglades Rifle Range in Section 53-39-6. However, other than the noise element associated with such use, no major impact is posed by this facility.

A potential area of concern, however, must include the special permits for excavations which exist within Sub-area 4. Within this area there are approximately 3,918 acres upon which there are active permits for lake excavation. Approximately 238 acres have been presently excavated, leaving approximately 3,680 acres upon which excavation is permitted (see Appendix D) but yet to take place. The major concern is that regulations be imposed that maintain water quality within the resultant lakes. This becomes especially important due to their presence in an area presently so intricately tied into the Biscayne Aquifer system and within the area of the proposed backpumping project.

PART IV: URBAN ENVIRONMENT

LAND-USE

The East Everglades Moratorium Area encompasses 206,620 acres or approximately 323 square miles. Sub-areas 1, 2, 3 and 4 total 269 square miles of which 240 square miles or 88 percent of the study area are presently in either open space or natural areas that are essentially undisturbed.

Active agriculture use accounts for approximately 6000 acres or about 3.7 percent of the land presently disturbed. Most of the agricultural use is for either row crops or groves and this usage is concentrated in Sub-area 2. The major industrial activity in the study area is excavating limestone for aggregate and cement manufacturing. Land presently being actively utilized by this industry is approximately two square miles or about .8 of one percent of the total. The Aerojet Corporation in the extreme southern portion of Sub-area 1 has 13 buildings concentrated on approximately 160 acres of land with some minor auxillary structures separated from the main complex.

Single family homes and trailers are the predominant type of residential development. Approximately 110 of such residences lie within Sub-area 2 north of Grossman Hammock Drive. These residences are often associated with small farming activities.

The few commercial facilities present within the area are centered along the Tamiami Trail and consist of several general stores, service station, a go-cart operator, gun shop and a beer and wine store. Two large parks are located within the East Everglades Moratorium area. They are the Grossman Hammock State Park (640 acres) and the Trail Glade Rifle Range (675 acres). Both of these parks are special purpose parks. Grossman Hammock is patronized for the camp grounds and for nature study. The Trail Glade Rifle Range is used mainly for gun practice.

Man-made lakes excluding the county's primary and secondary canals, total approximately 500 acres. Other land uses within the area include several military installations (see Existing Land Use Maps, Figure 1-K1 to 1-K10).

ZONING

Existing zoning classifications for the Study-areas 1-4 are shown on Figures 1-L1 to 1-L10. More than 90 percent of the area is zoned GU (Interim District), and AU (Agricultural District). The Interim and Agricultural zoning permits single family residences on five acre lots. (See Appendix E)

Industrial Use zoning totals 14,986 acres or 8.7 percent of the total land acreage while Business and Commercial zoning totals 33 acres. There are 1256 acres zoned for Estate Use (one-acre); 40 acres zoned Residential Use 4-A (RU-4A) permitting a maximum density of 50 units to the acre, and 40 acres of Residential Use 1(RU-1) which allows a maximum density of 5.75 units to the area when clustered.

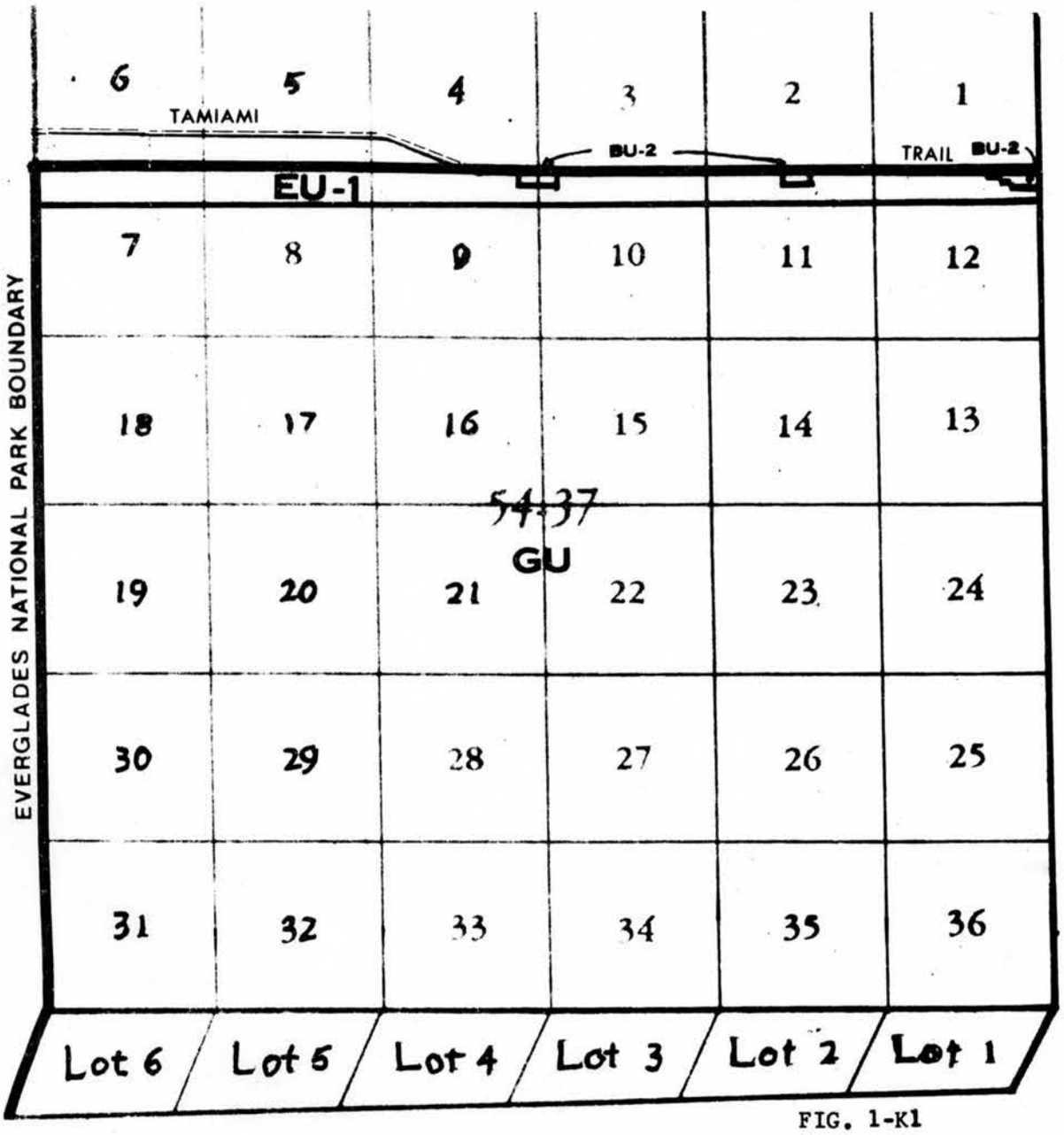
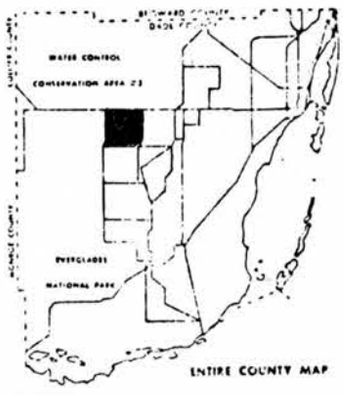


FIG. 1-K1

ZONING SUBAREA 1

54-37



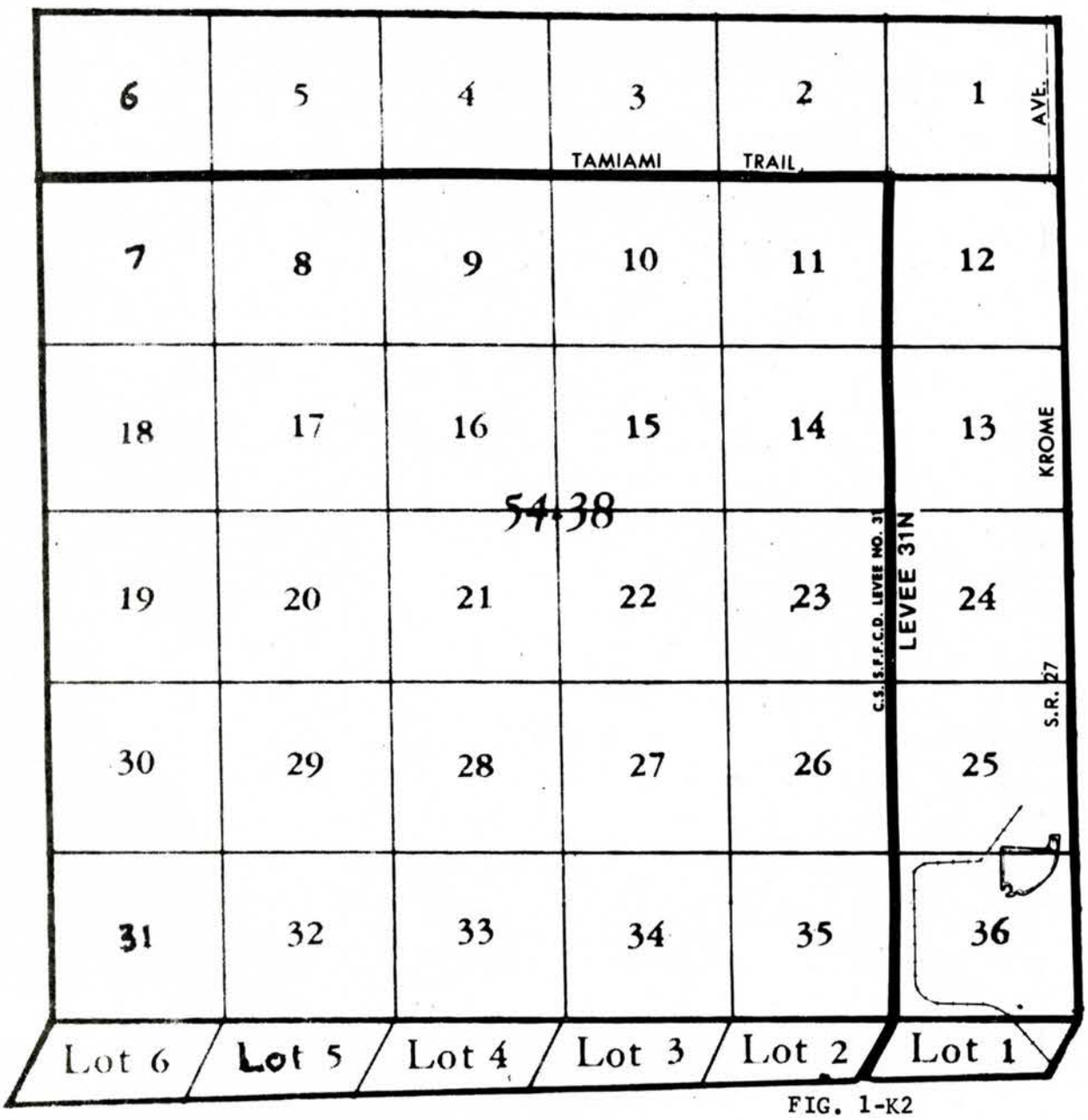
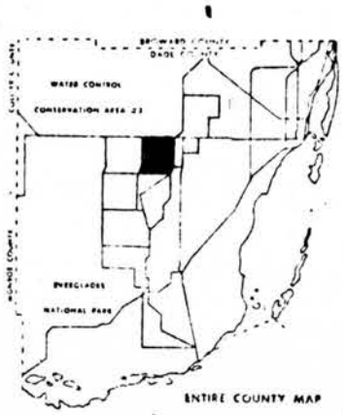


FIG. 1-K2

COMMERICAL
HEAVY INDUSTRY
INSTITUTIONAL
PARKS
AGRICULTURE
WATER
TRANSPORTATION & UTILITIES
SCATTERED RESIDENTIAL (Less than 10 units/sq. mile)
SCATTERED RESIDENTIAL & AGRICULTURE
OPEN SPACE



EXISTING LAND USE SUBAREA 1

54-38

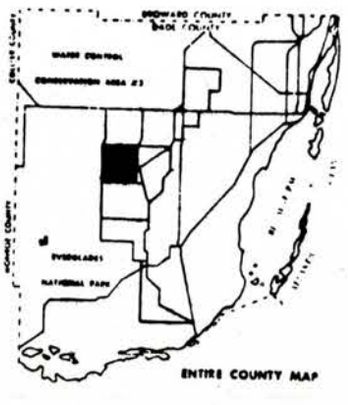
EVERGLADES NATIONAL PARK BOUNDARY

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

55-37

FIG. 1-K3

- COMMERICAL
- HEAVY INDUSTRY
- INSTITUTIONAL
- PARKS
- AGRICULTURE
- WATER
- TRANSPORTATION & UTILITIES
- SCATTERED RESIDENTIAL (Less than 10 units/sq. mile)
- SCATTERED RESIDENTIAL & AGRICULTURE
- OPEN SPACE



EXISTING LAND USE SUBAREA 1
55-37

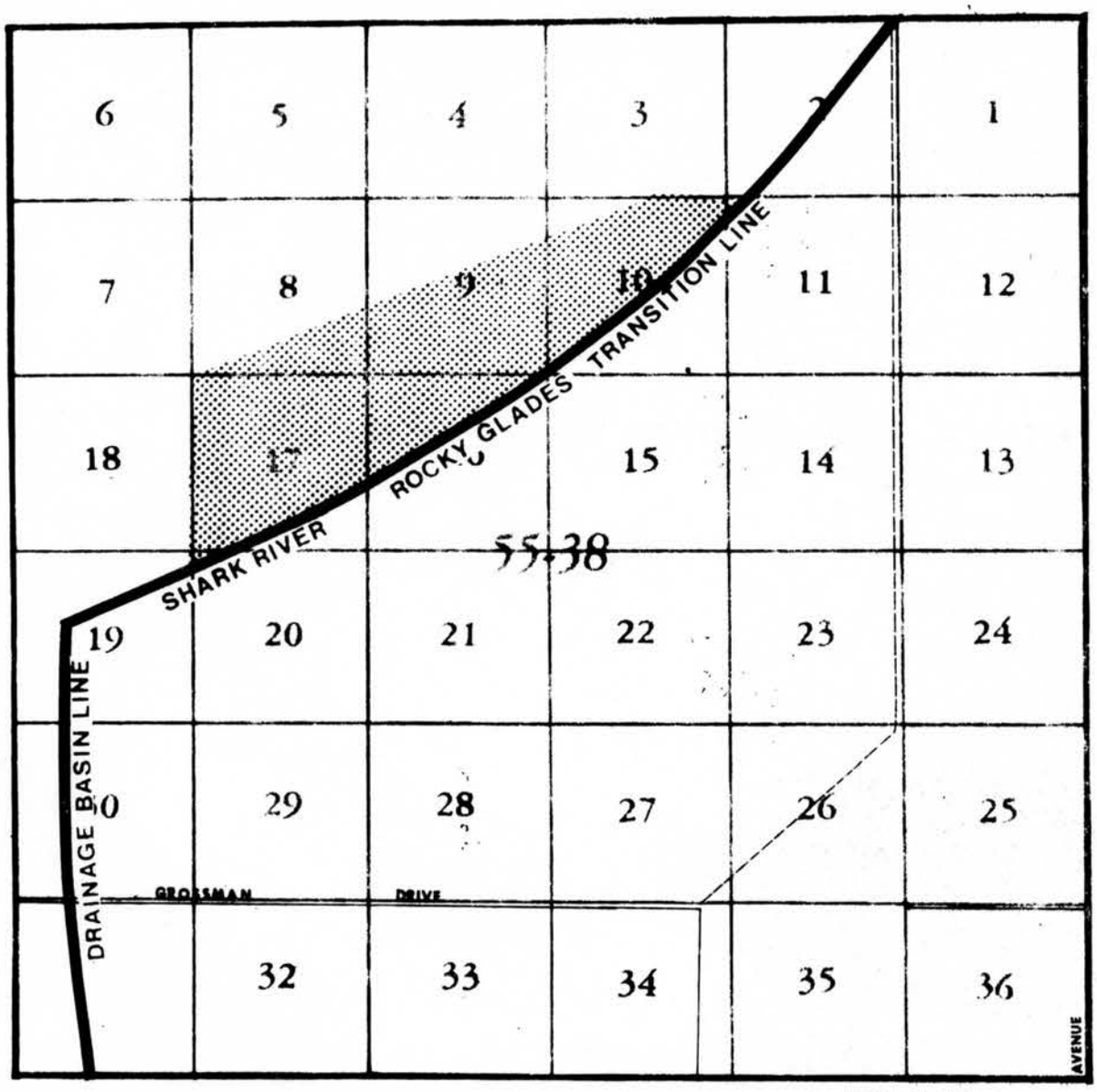
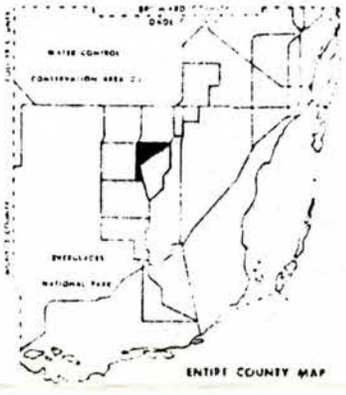


FIG. 1-K4

- COMMERICAL
- HEAVY INDUSTRY
- INSTITUTIONAL
- PARKS
- AGRICULTURE
- WATER
- TRANSPORTATION & UTILITIES
- SCATTERED RESIDENTIAL (Less than 10 units/sq. mile)
- SCATTERED RESIDENTIAL & AGRICULTURE
- OPEN SPACE



EXISTING LAND USE SUBAREA 1

55-38

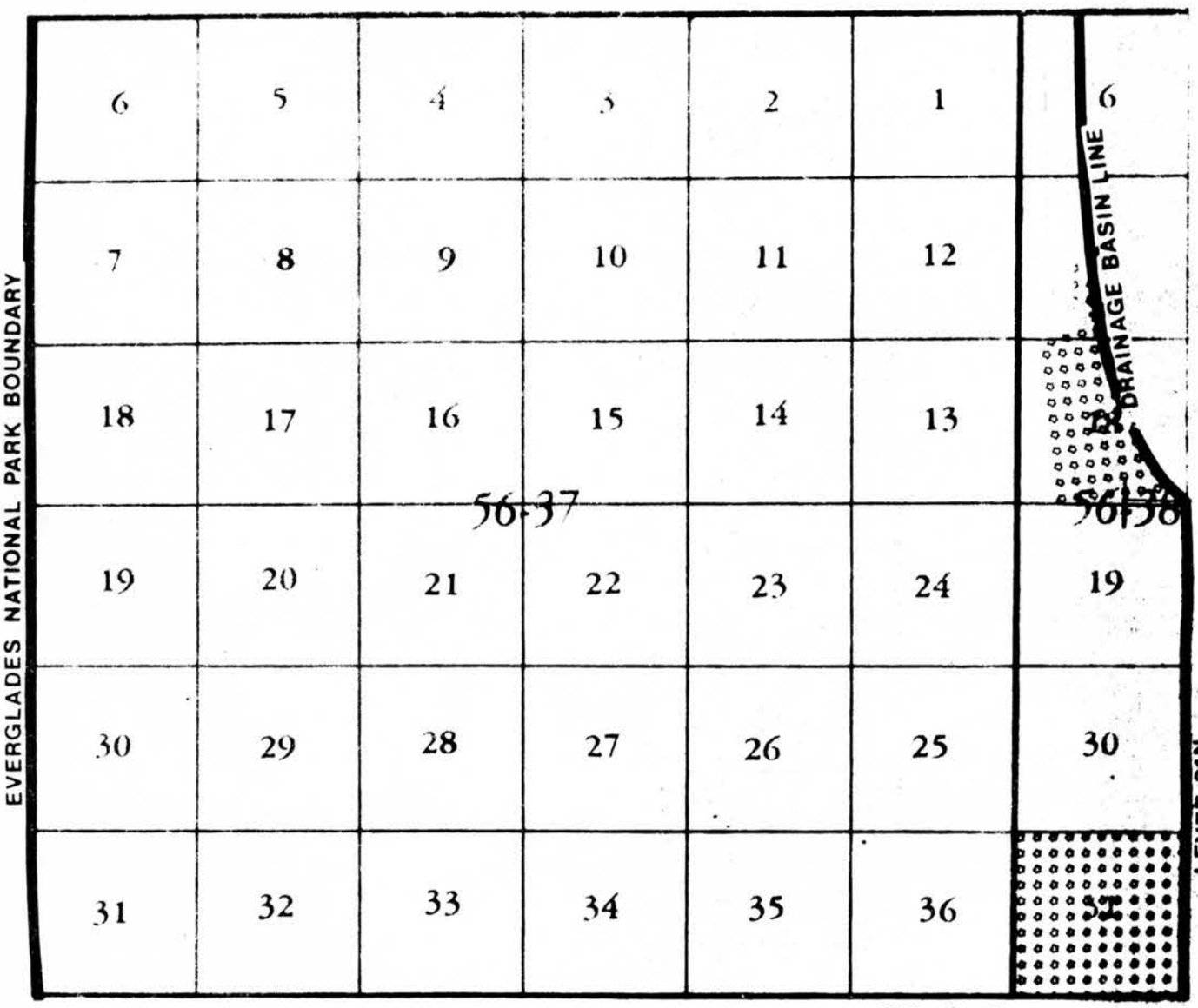
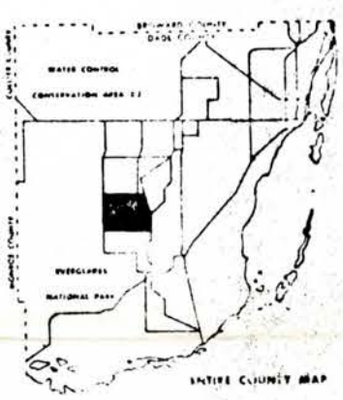


FIG. 1-K5

COMMERICAL
HEAVY INDUSTRY
INSTITUTIONAL
PARKS
AGRICULTURE
WATER
TRANSPORTATION & UTILITIES
SCATTERED RESIDENTIAL (Less than 10 units/sq. mile)
SCATTERED RESIDENTIAL & AGRICULTURE
OPEN SPACE



EXISTING LAND USE SUBAREA 1
56-37; 56-38

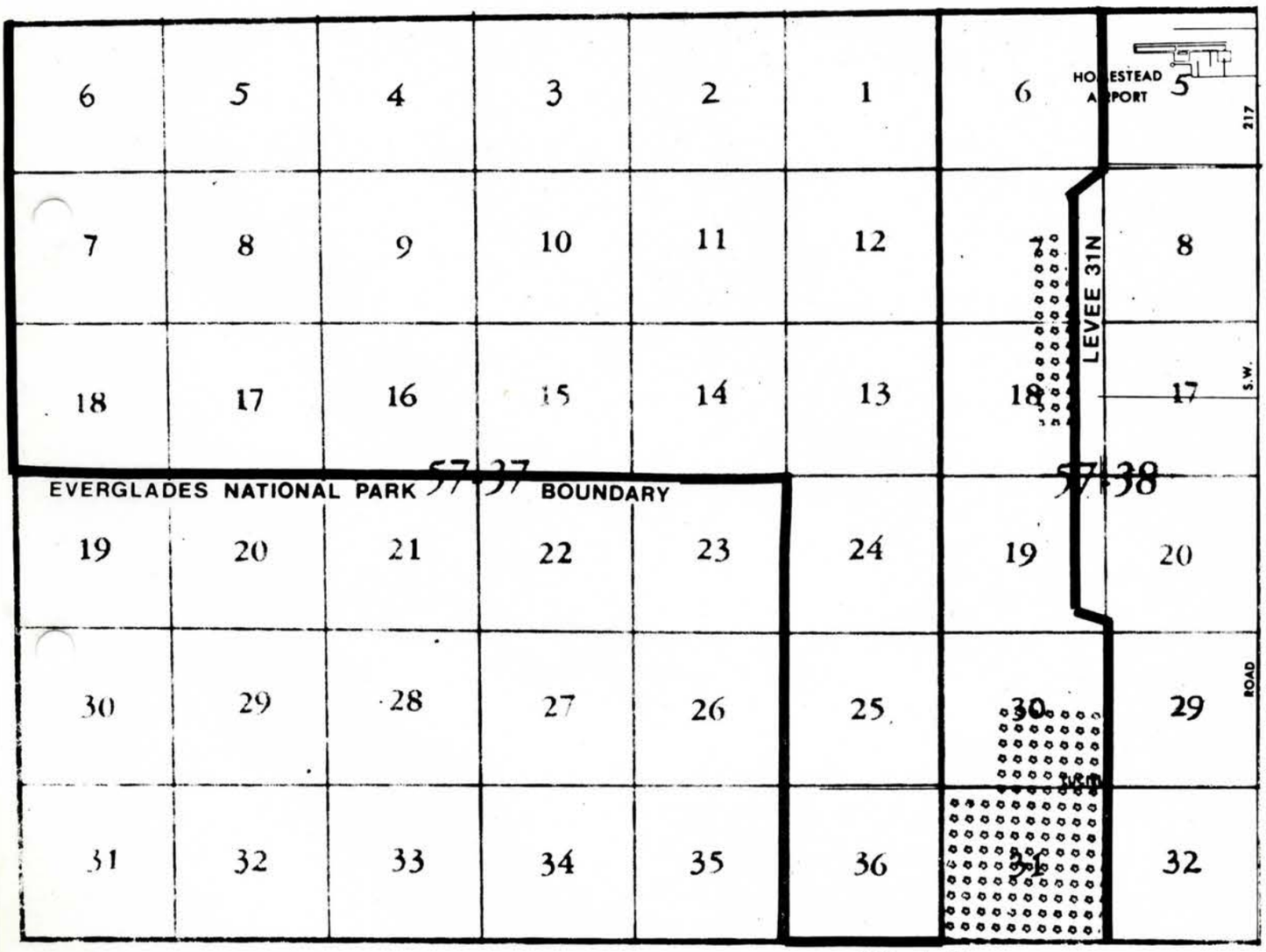
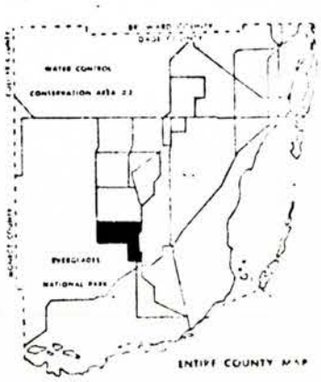
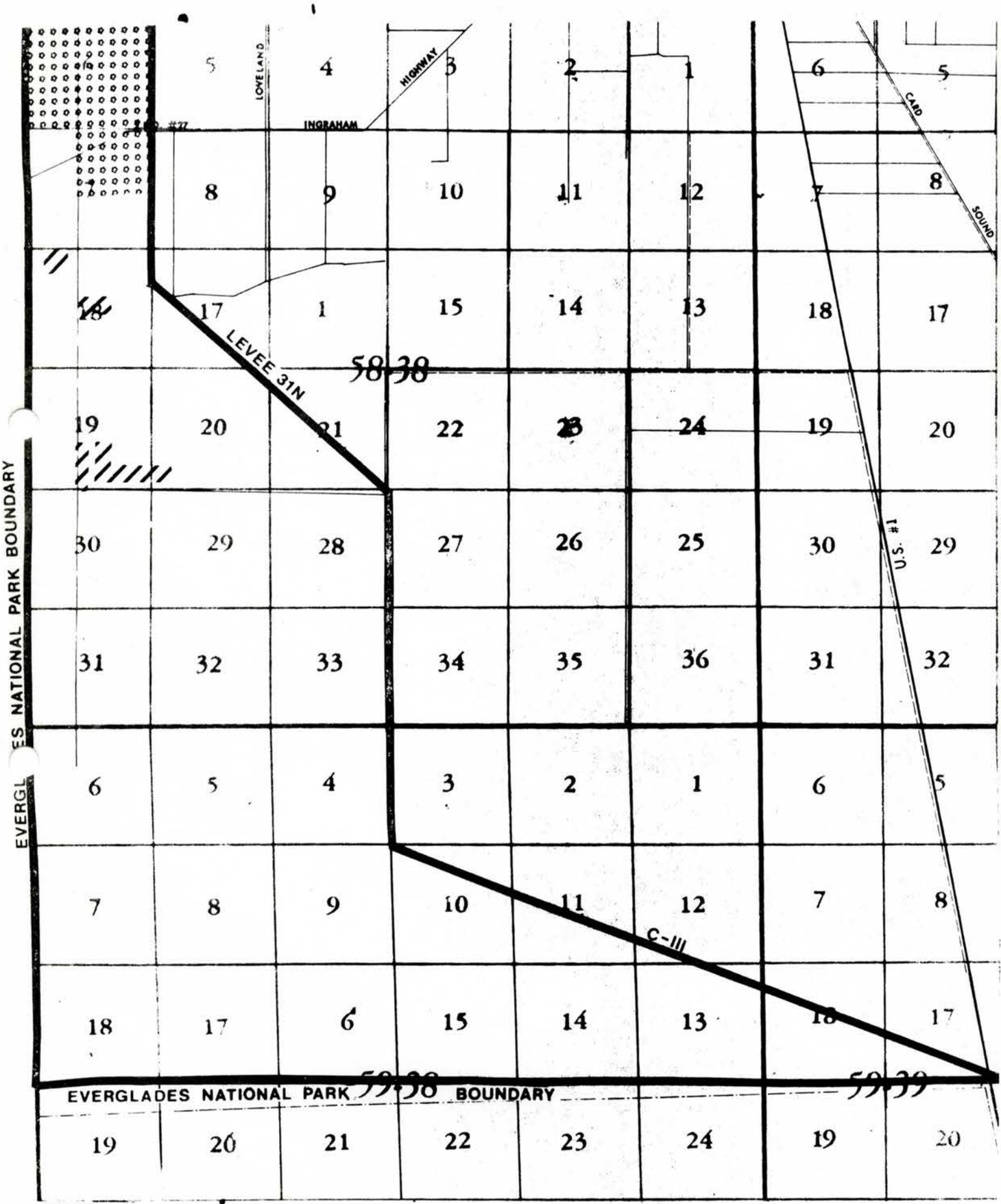


FIG. 1-K6

- COMMERICAL
- HEAVY INDUSTRY
- INSTITUTIONAL
- PARKS
- AGRICULTURE
- WATER
- TRANSPORTATION & UTILITIES
- SCATTERED RESIDENTIAL (Less than 10 units/sq. mile)
- SCATTERED RESIDENTIAL & AGRICULTURE
- OPEN SPACE

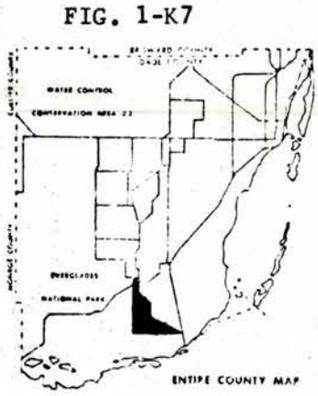


EXISTING LAND USE SUBAREA 1
57-37, 57-38



COMMERICAL
HEAVY INDUSTRY
INSTITUTIONAL
PARKS
AGRICULTURE
WATER
TRANSPORTATION & UTILITIES
SCATTERED RESIDENTIAL (Less than 10 units/sq. mile)
SCATTERED RESIDENTIAL & AGRICULTURE
OPEN SPACE

FIG. 1-K7



EXISTING LAND USE SUBAREA 1

58-38;59-38; 59-39

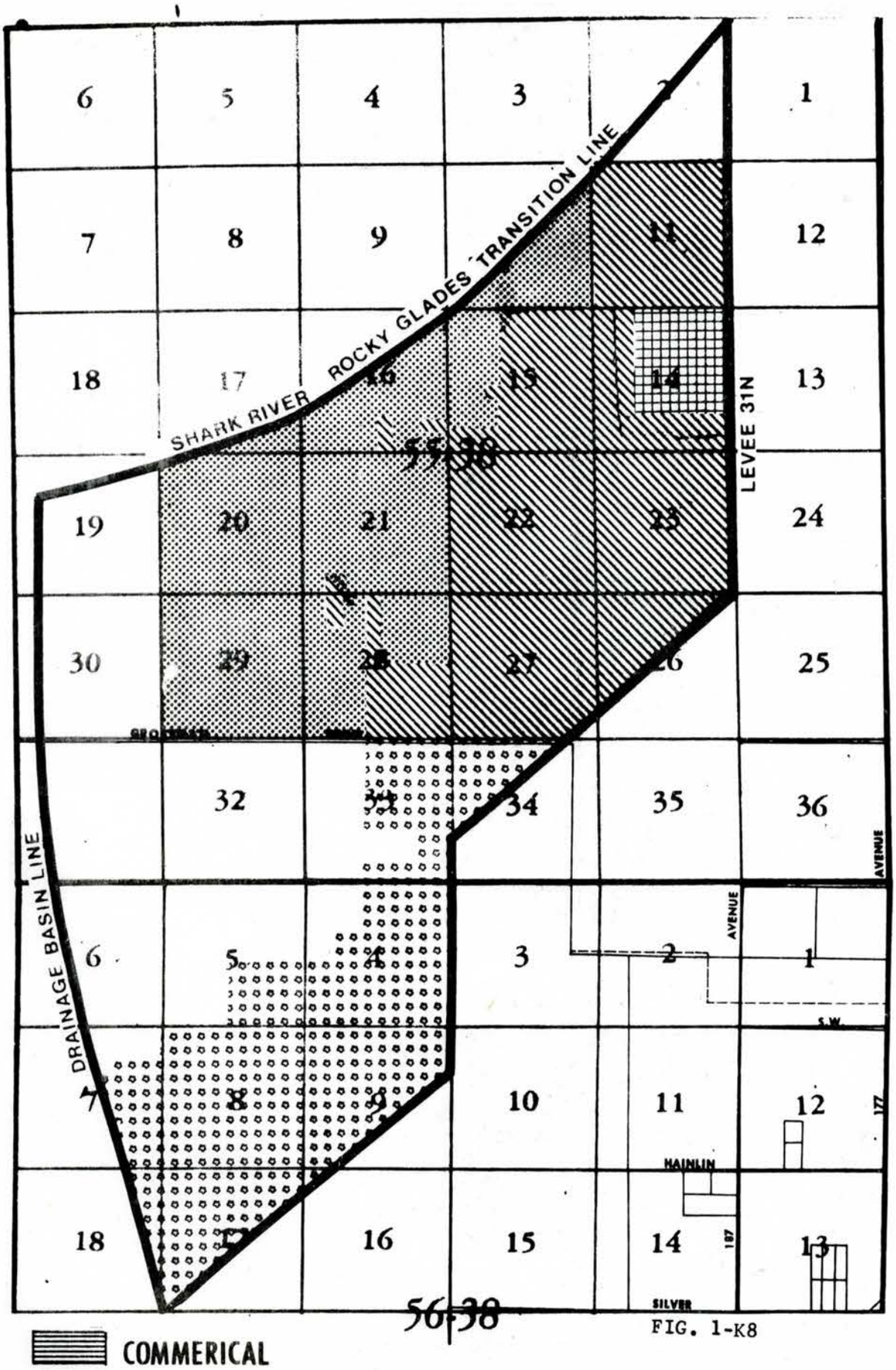
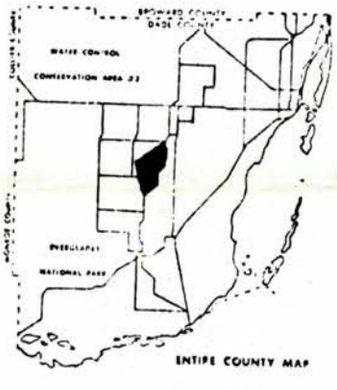


FIG. 1-K8

- COMMERICAL
- HEAVY INDUSTRY
- INSTITUTIONAL
- PARKS
- AGRICULTURE
- WATER
- TRANSPORTATION & UTILITIES
- SCATTERED RESIDENTIAL (Less than 10 units/sq. mile)
- SCATTERED RESIDENTIAL & AGRICULTURE
- OPEN SPACE



EXISTING LAND USE SUBAREA 2

55-38; 56-38

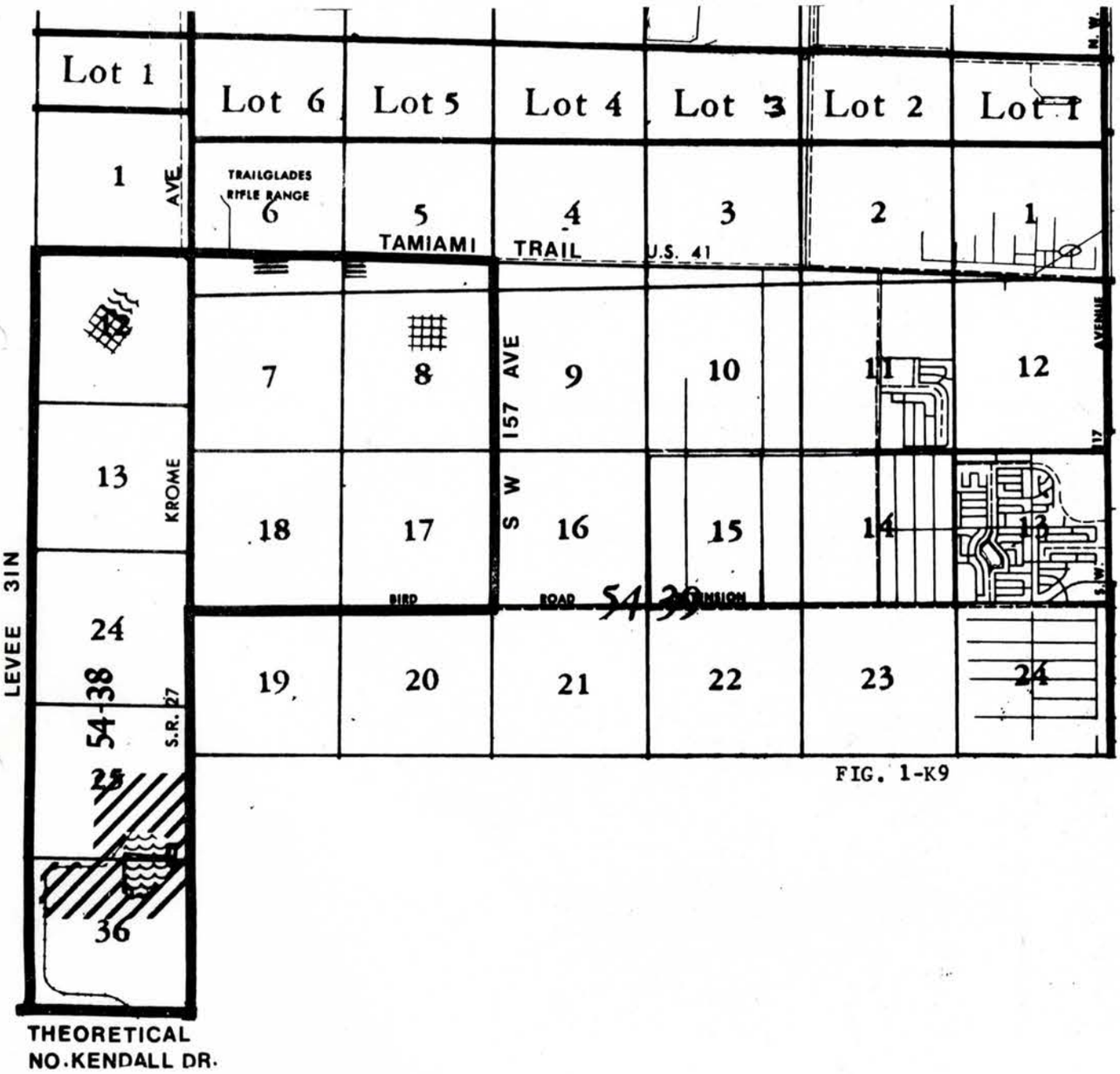
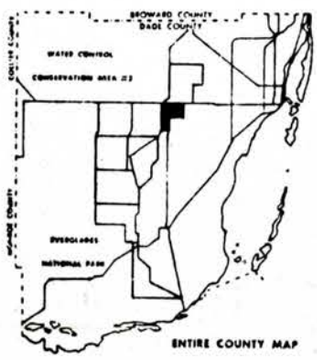


FIG. 1-K9

- COMMERICAL
- HEAVY INDUSTRY
- INSTITUTIONAL
- PARKS
- AGRICULTURE
- WATER
- TRANSPORTATION & UTILITIES
- SCATTERED RESIDENTIAL (Less than 10 units/sq. mile)
- SCATTERED RESIDENTIAL & AGRICULTURE
- OPEN SPACE



EXISTING LAND USE SUBAREA 3
54-38;54-39

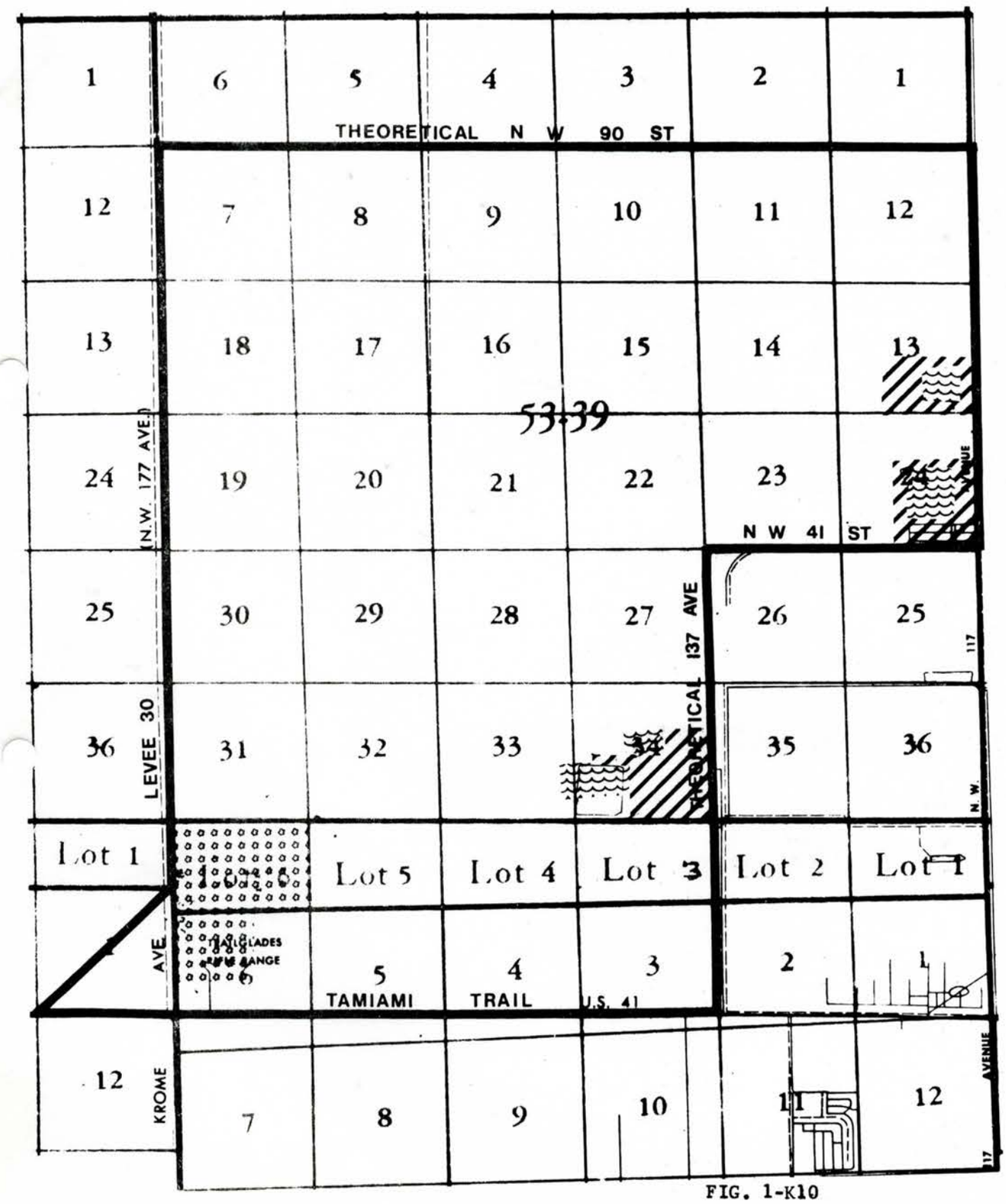
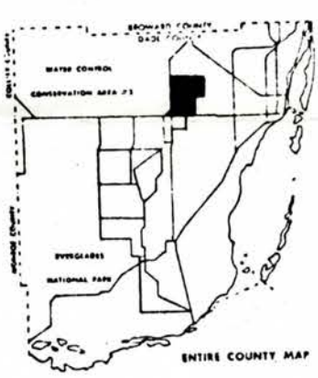


FIG. 1-K10

- COMMERICAL
- HEAVY INDUSTRY
- INSTITUTIONAL
- PARKS
- AGRICULTURE
- WATER
- TRANSPORTATION & UTILITIES
- SCATTERED RESIDENTIAL (Less than 10 units/sq. mile)
- SCATTERED RESIDENTIAL & AGRICULTURE
- OPEN SPACE



EXISTING LAND USE SUBAREA 4

53-39; 54-39

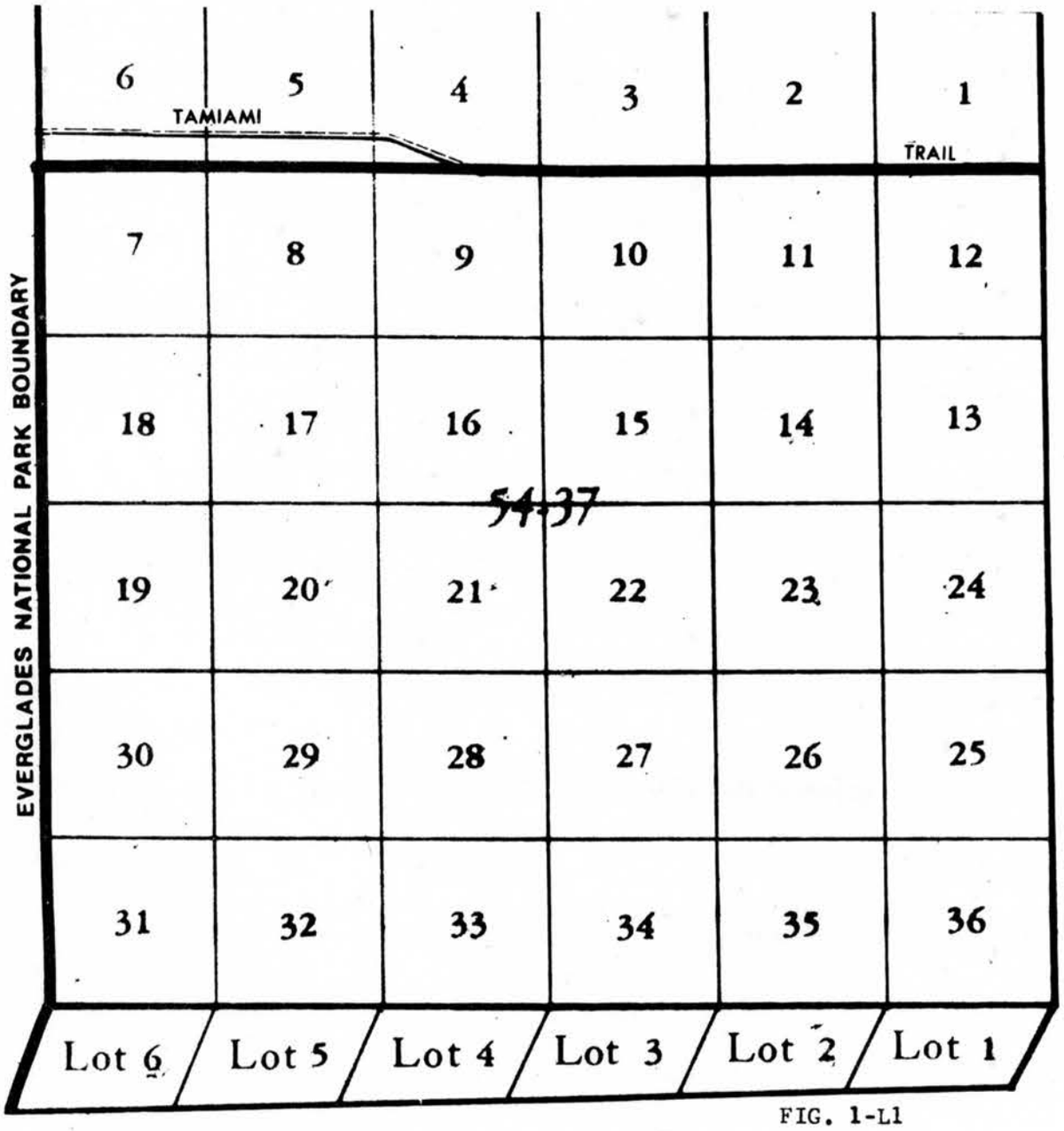
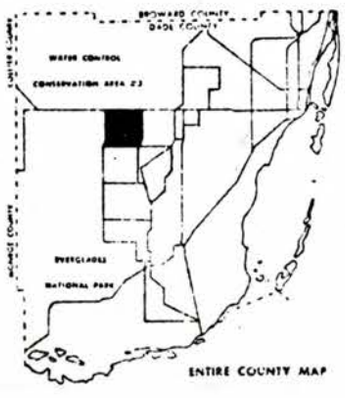


FIG. 1-L1



- COMMERICAL
- HEAVY INDUSTRY
- INSTITUTIONAL
- PARKS
- AGRICULTURE
- WATER
- TRANSPORTATION & UTILITIES
- SCATTERED RESIDENTIAL (Less than 10 units/sq. mile)
- SCATTERED RESIDENTIAL & AGRICULTURE
- OPEN SPACE

EXISTING LAND USE SUBAREA 1
54-37

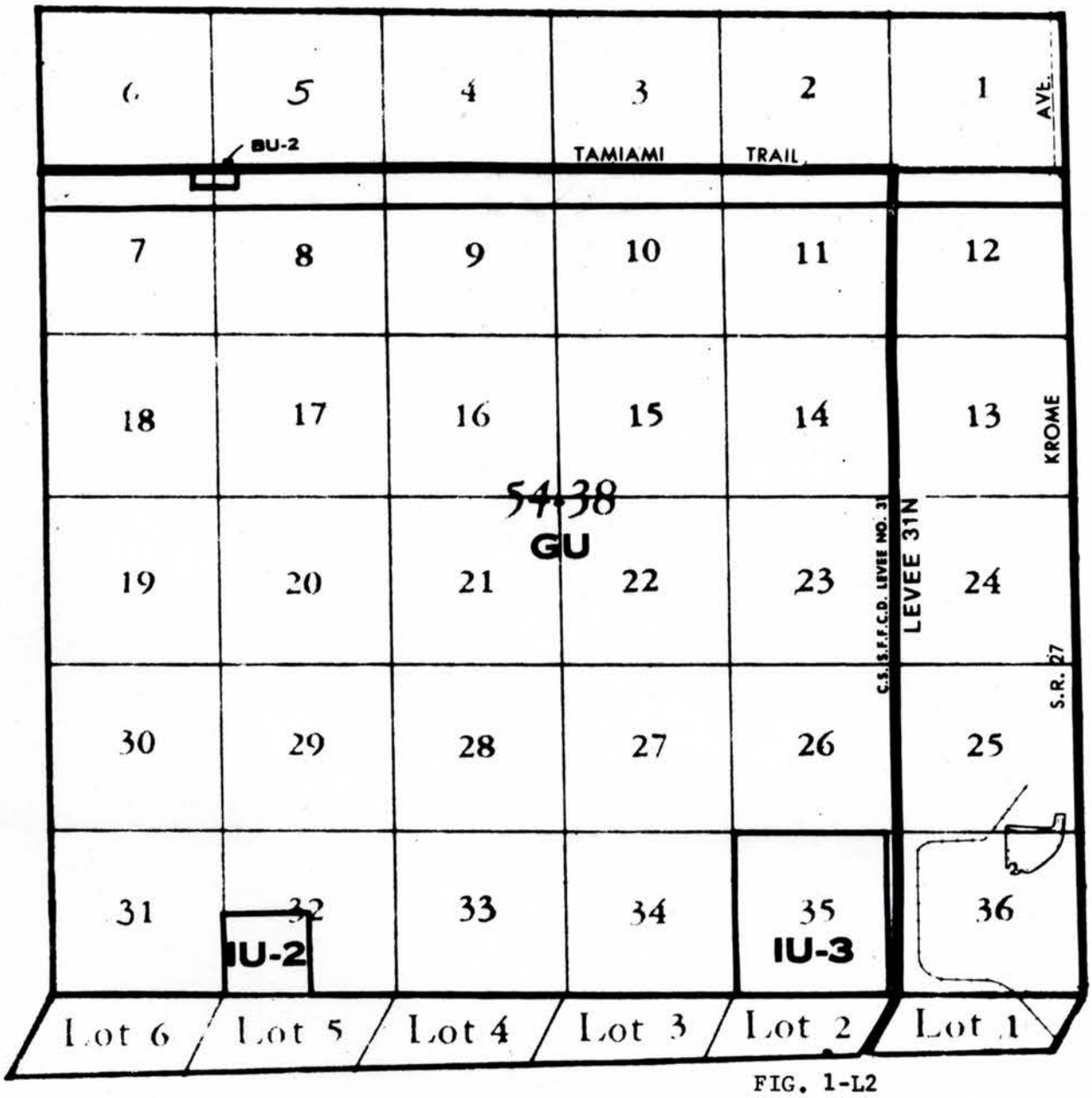
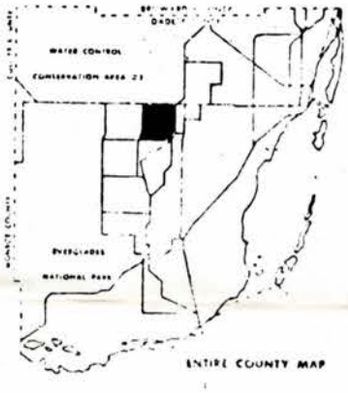


FIG. 1-L2

ZONING SUBAREA 1

54-38



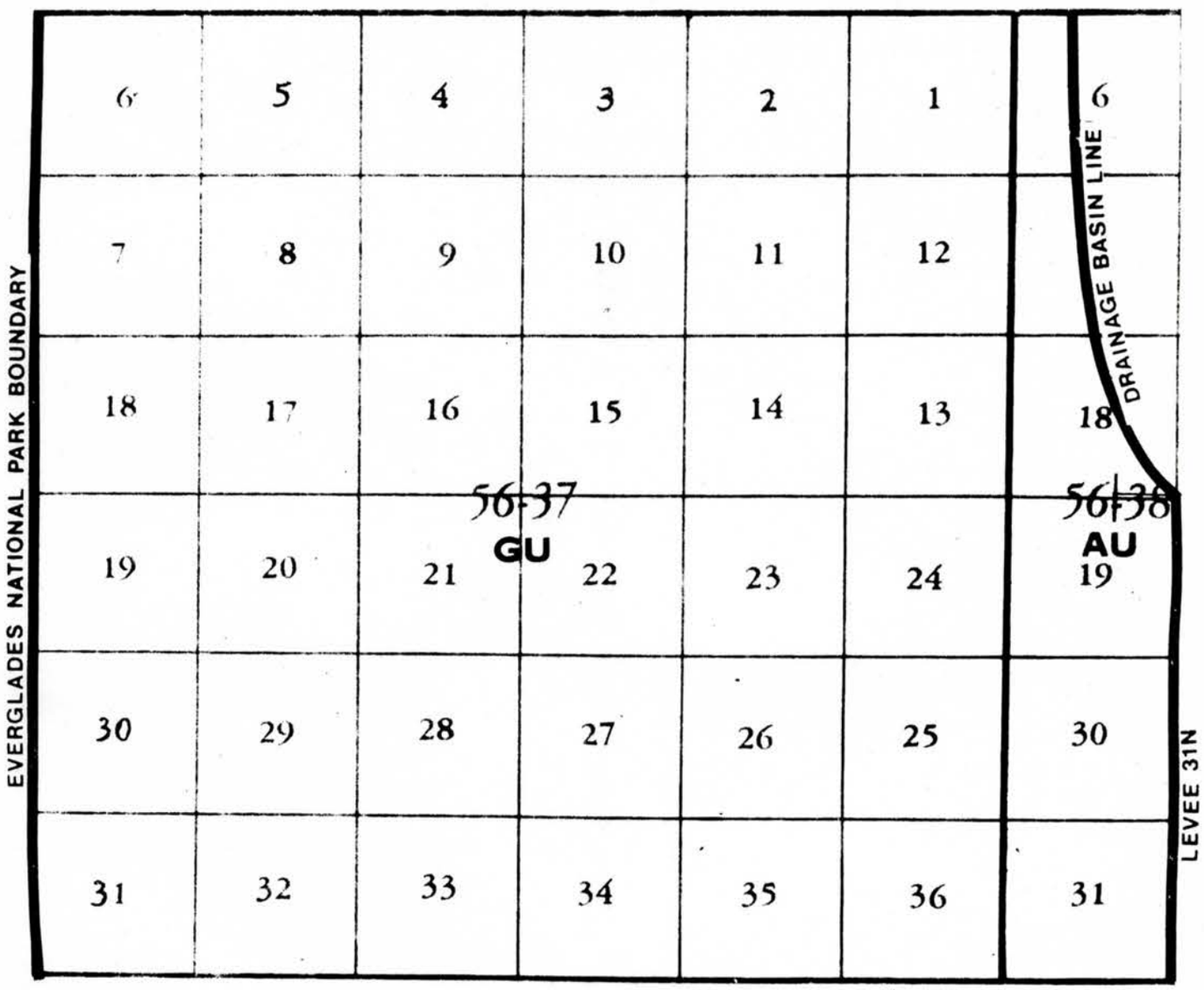
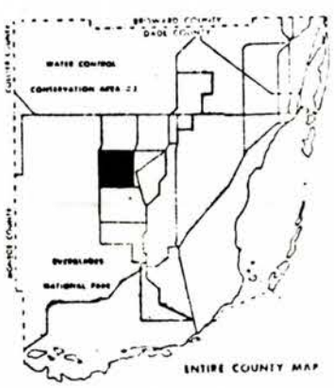


FIG. 1-L3



ZONING SUBAREA 1

56-37; 56-38

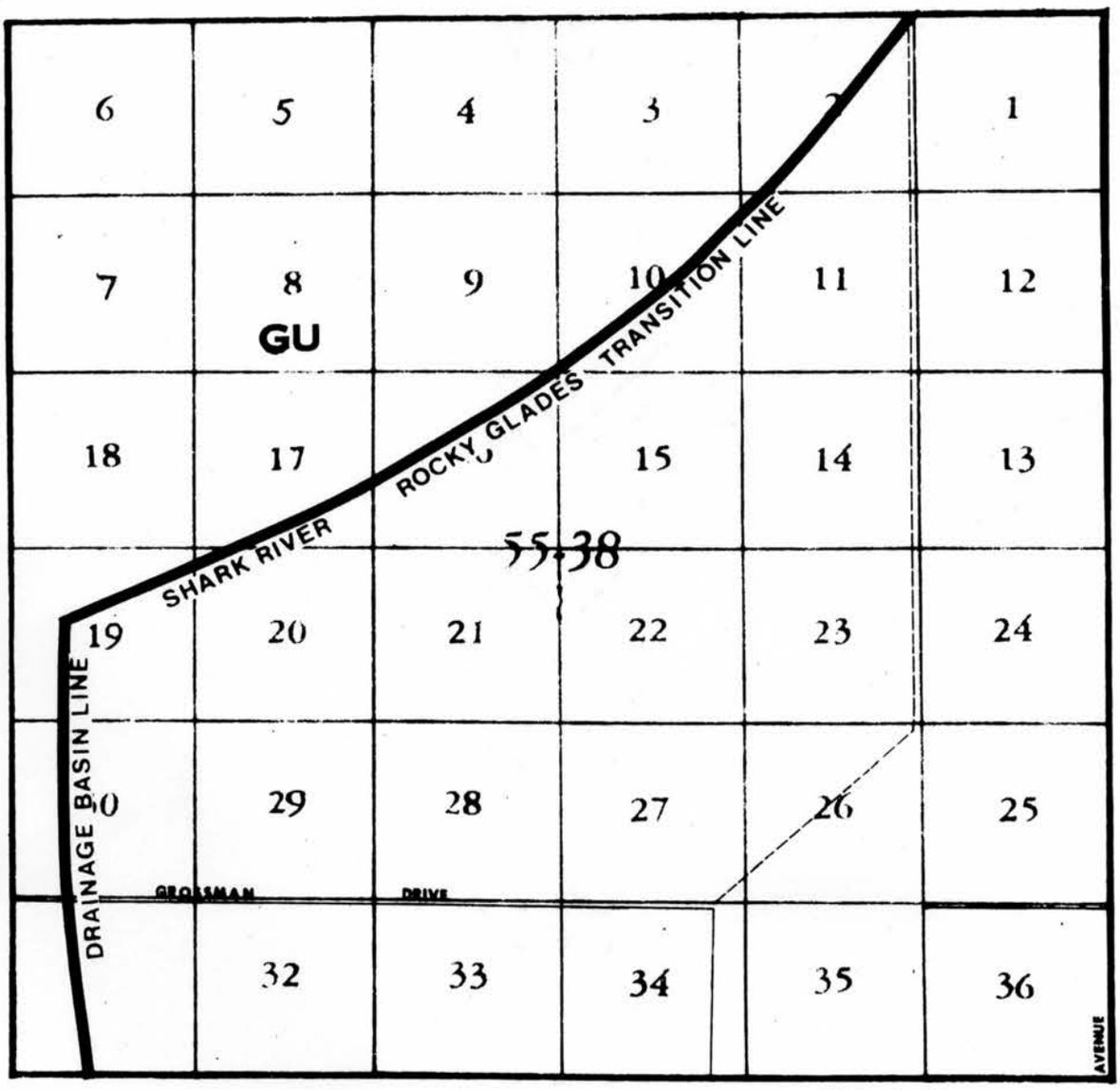


FIG. 1-L4

ZONING SUBAREA 1

55-38

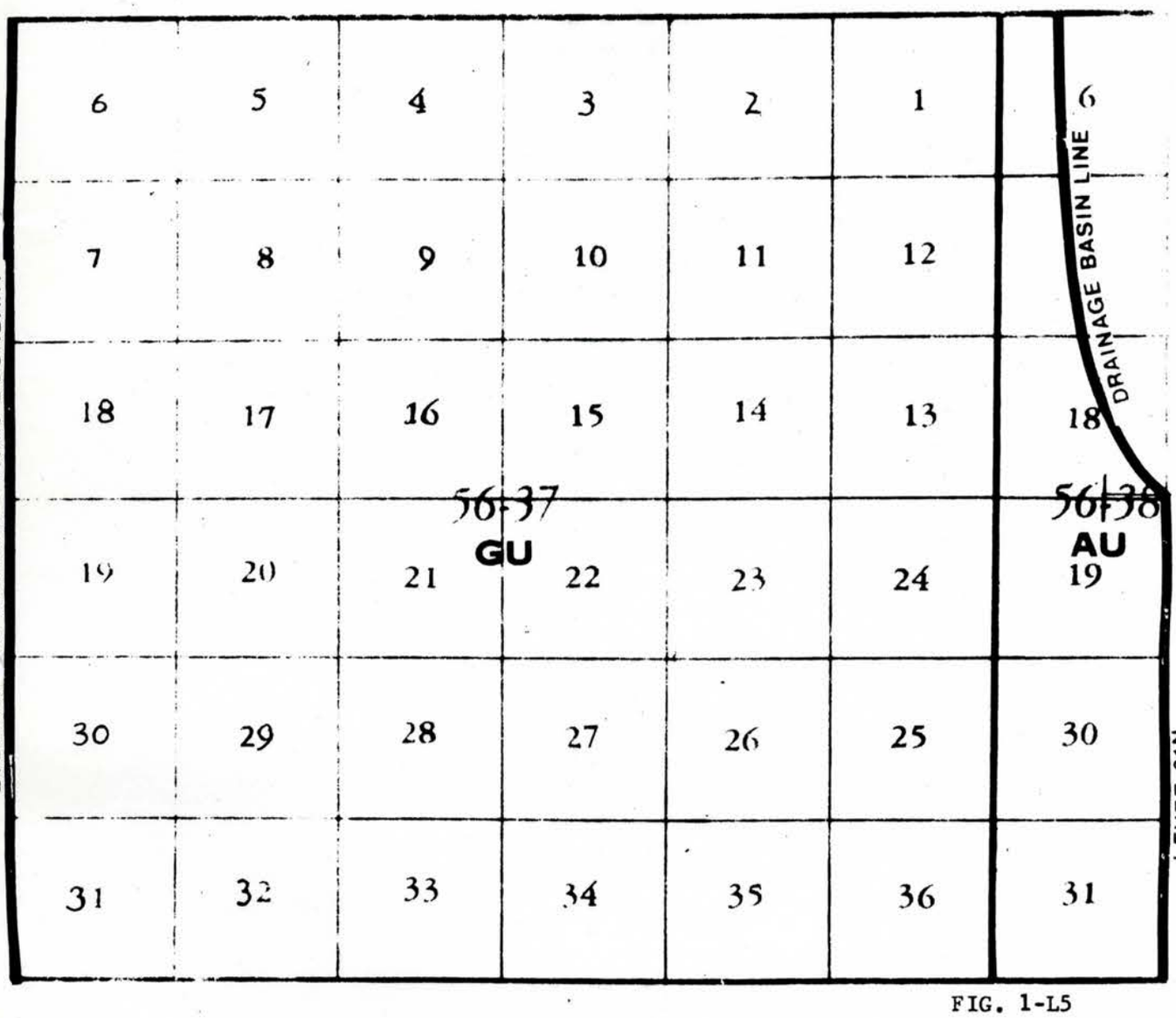
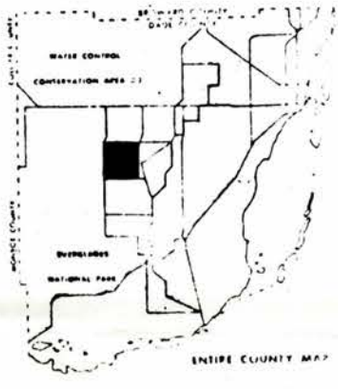


FIG. 1-L5



ZONING SUBAREA 1

56-37; 56-38

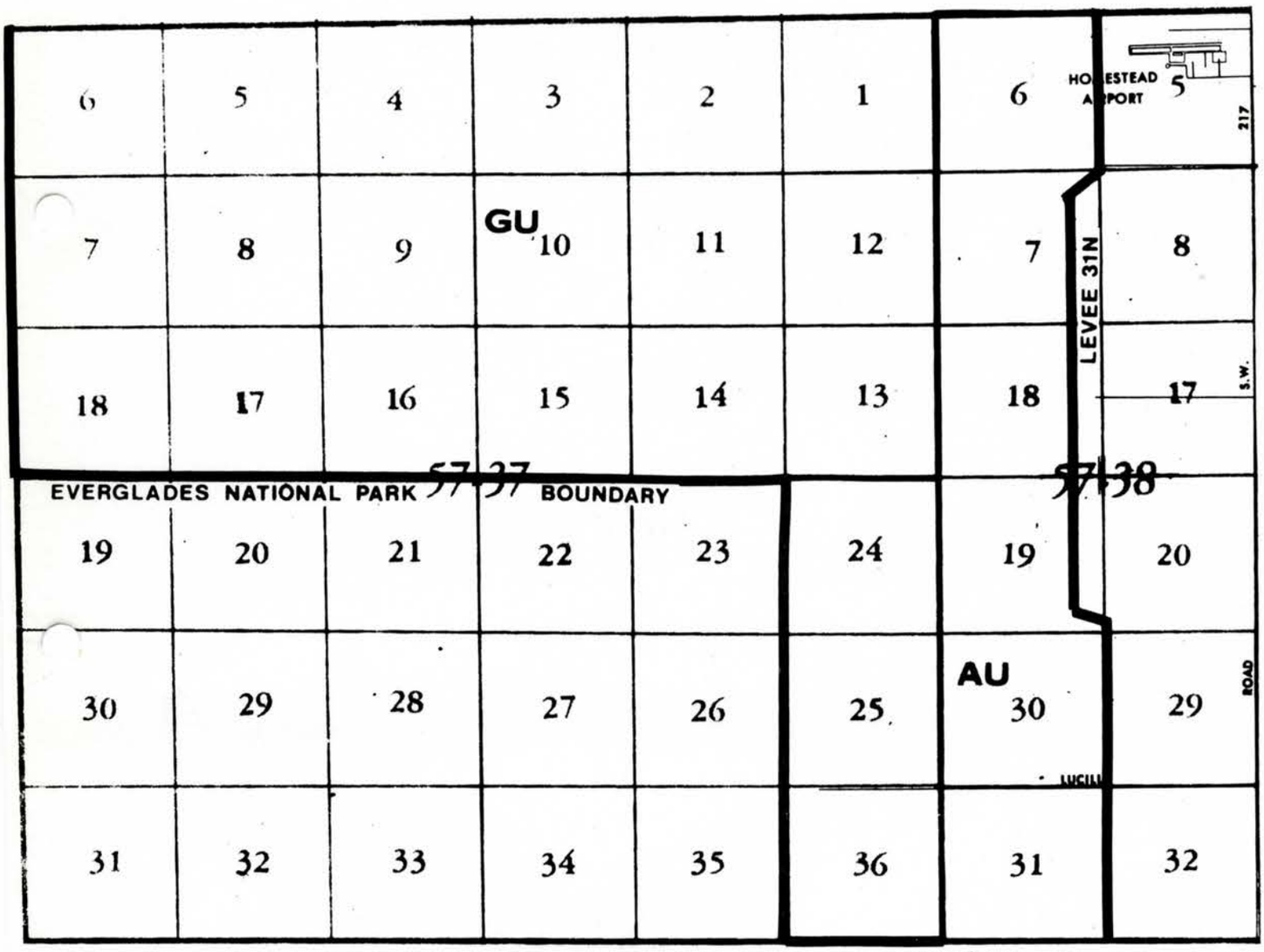
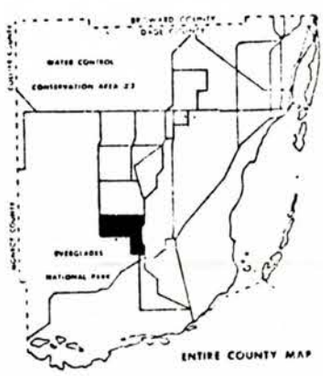


FIG. 1-L6

ZONING SUBAREA 1

57-37; 57-38



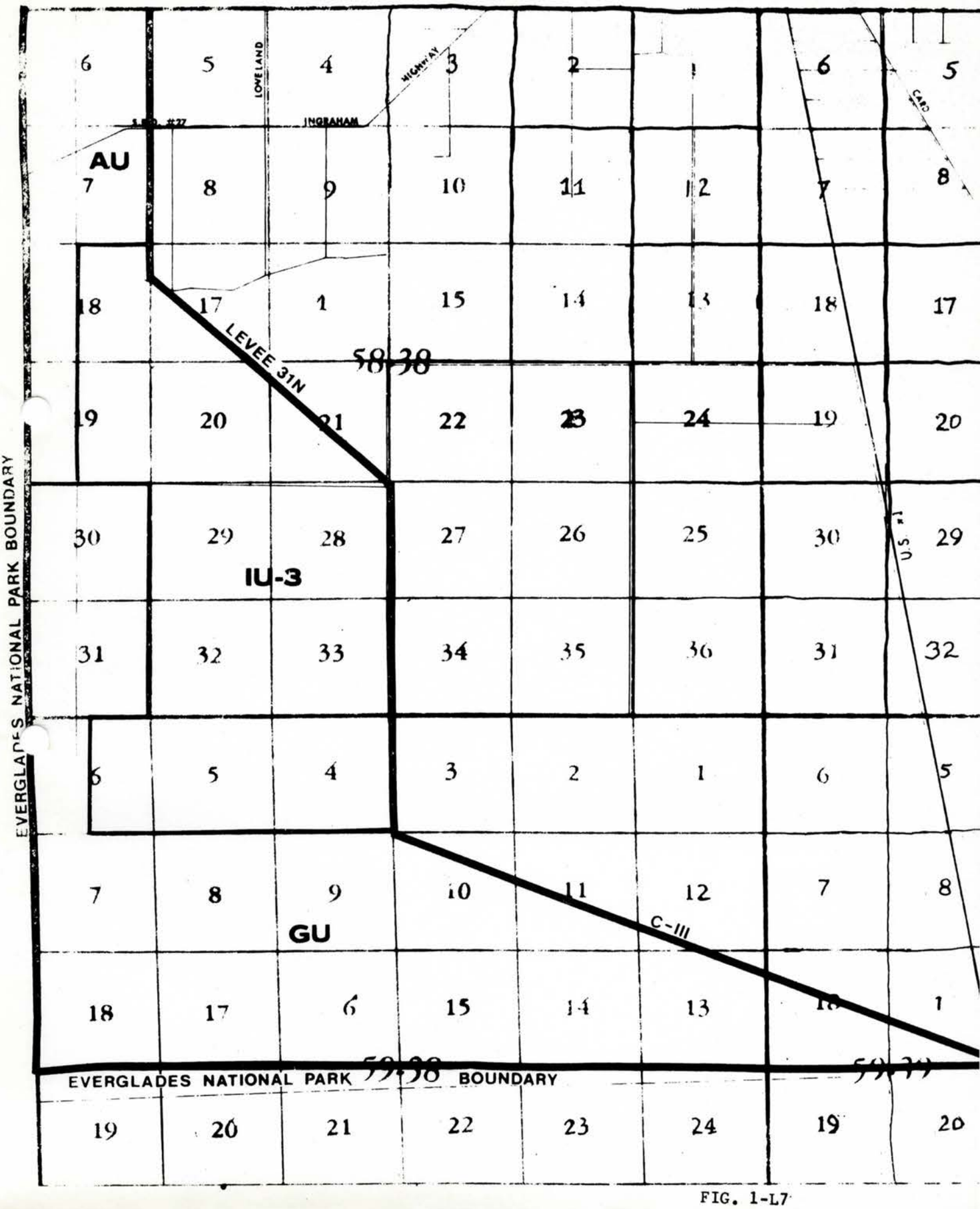
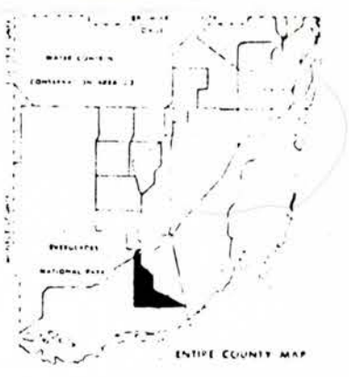


FIG. 1-L7

ZONING SUBAREA 1

58-38;59-38;59-39



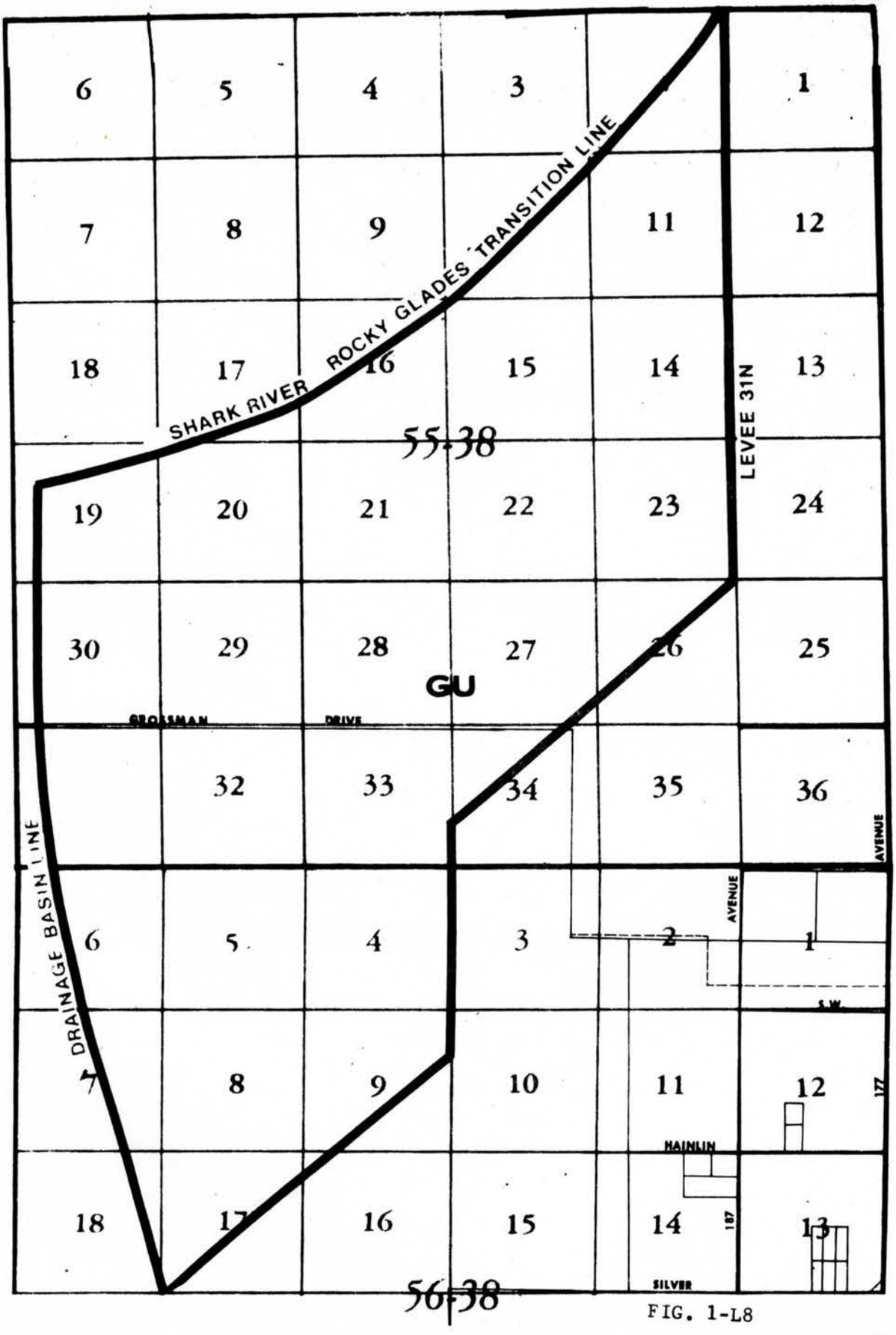
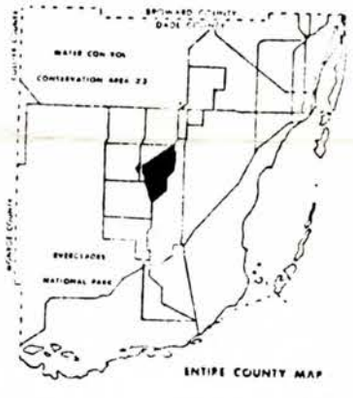


FIG. 1-L8

ZONING SUBAREA 2

55-38; 56-38



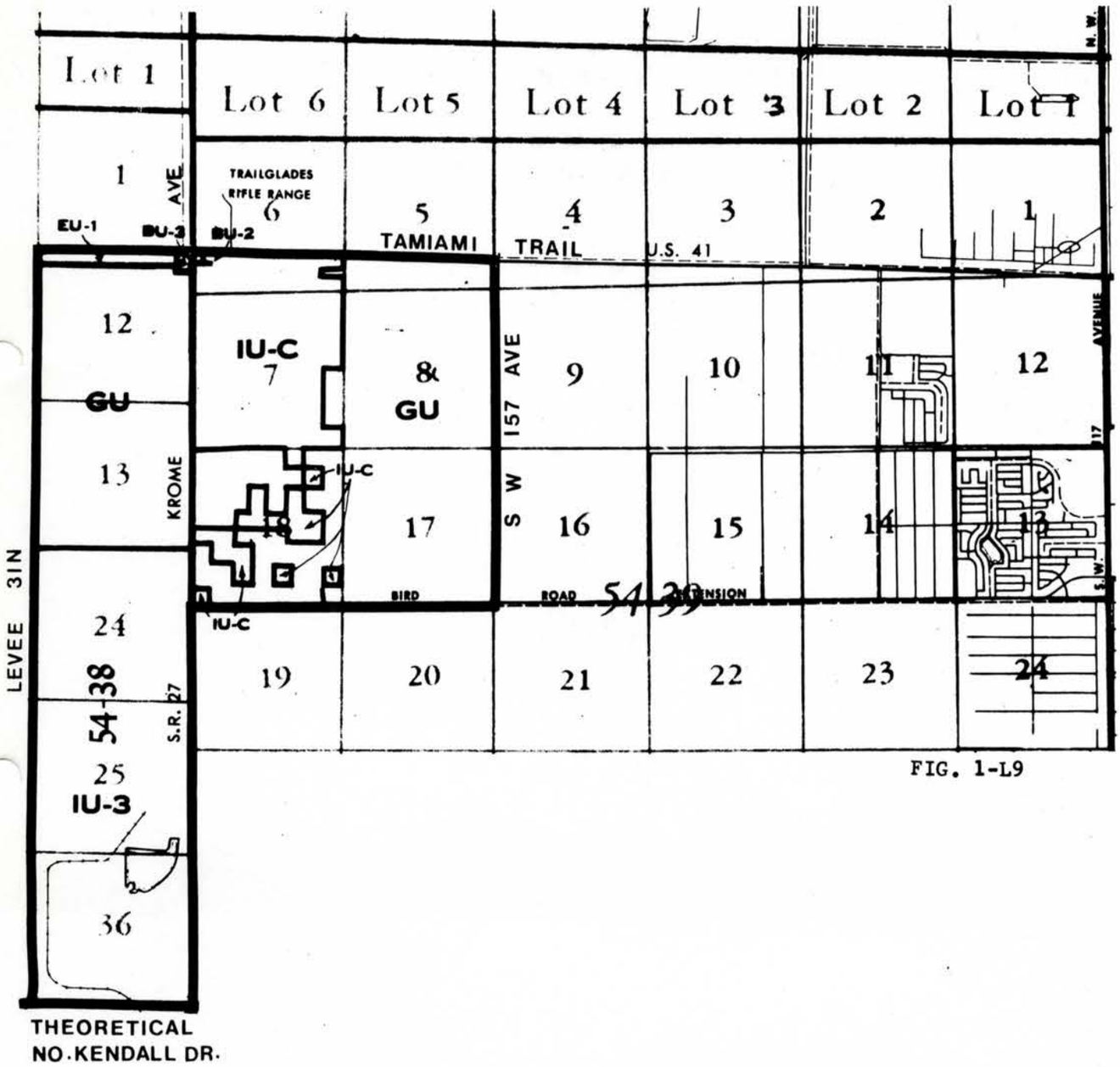
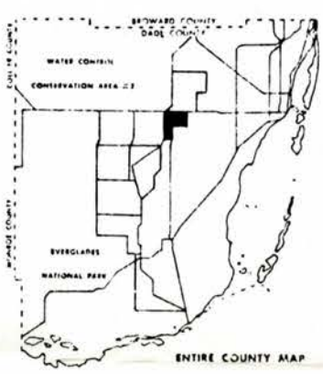


FIG. 1-L9

ZONING SUBAREA 3

54-38; 54-39



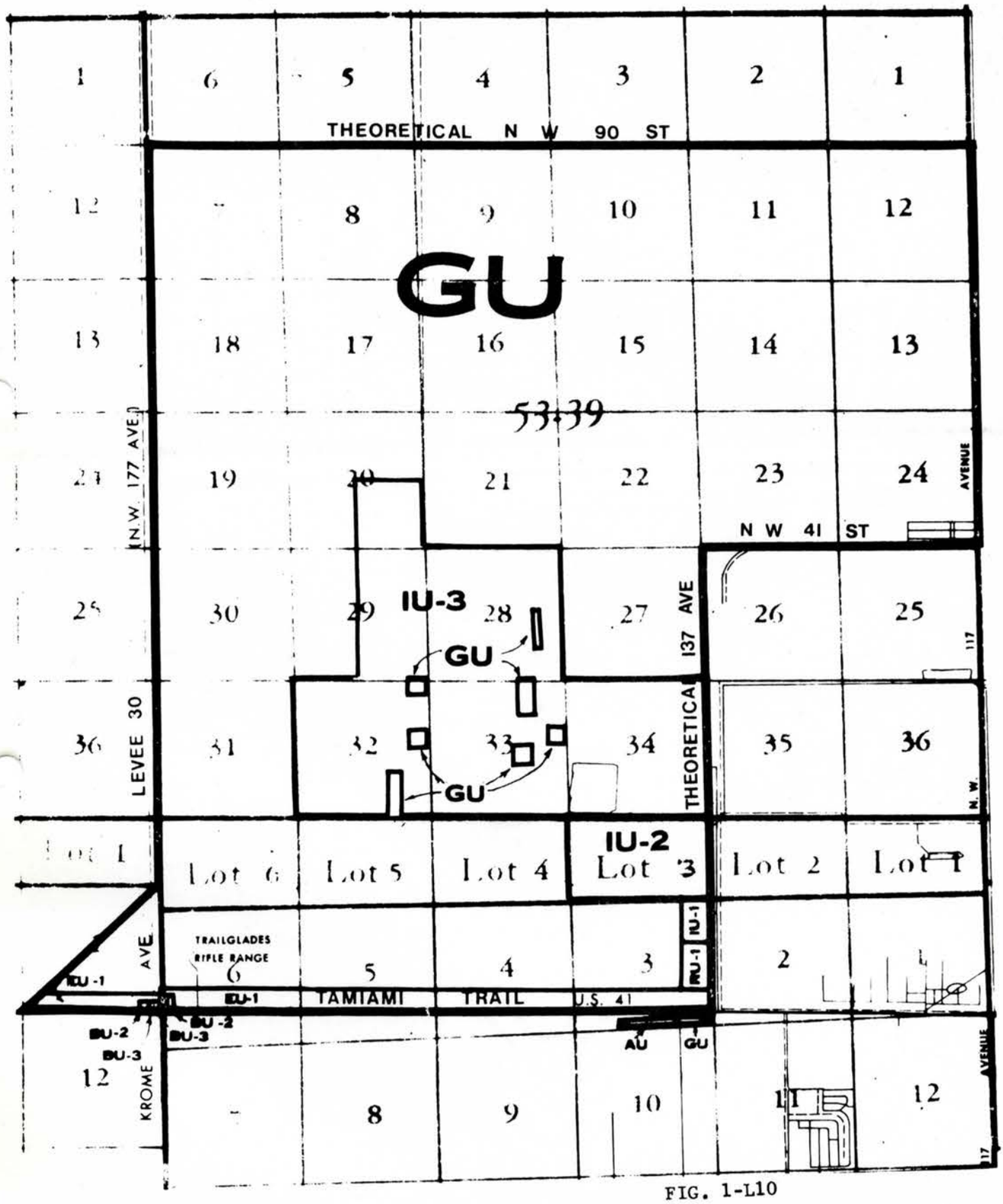


FIG. 1-L10

ZONING SUBAREA 4
53-39; 54-39

OWNERSHIP PATTERNS

Ownership patterns in the East Everglades Moratorium Area are divided into two components. The following component explains ownership dispersion in Sub-areas 1, 2, 3 and 4 (269 square miles). The remaining 54 square miles, Sub-area 5, are detailed in Section 2 of this report.

Appendix E gives a breakdown of ownership in land holdings of at least 160 contiguous acres. There are 29 different interests owning 105,108 acres or 61.1 percent of the 172,160 acres under study in this section. These land holdings are in tracts of 640 contiguous acres or more.

Two of the largest land owners Sub-areas 1 thru 4 of the Moratorium Area own approximately 32 percent of the land. One interest owns 24,655 acres while the other owns 30,165 acres. The next eight largest land owners own approximately 18 percent of the land or 30,596 acres. Therefore, the ten largest land owners just mentioned own approximately 50 percent of the land in this section of the Moratorium Area.

There are 32 different interests owning between 320 and 639 contiguous acres for a total of 8.5 percent of the land area, or 14,712 acres. An Additional 45 individuals own between 160 and 319 contiguous acres totaling 8,987 acres. The remaining land owners have holdings of less than 160 acres of land.

The two largest land holdings in the moratorium area are located in the southern portion of Sub-area 1. The northern portion of this Sub-area contains several ownerships of three square miles and over, but is dominated by ownerships in tracts of less than one square mile.

Sub-area 2 is characterized by land holdings of less than 160 contiguous acres. There are, however, a few tracts of land greater than 160 contiguous acres under one ownership.

Sub-area 3 is the smallest of the sub-areas and contains two ownerships of over one square mile. Most of the remaining acreage is in tracts of less than 160 contiguous acres.

Sub-area 4 is dominated by land holdings of 320 contiguous acres and over. As in the other sub-areas, there are some tracts in ownerships of less than 160 acres located throughout sub-area 4.

As mentioned previously, ownership patterns in Sub-area 5 are described in Section two of this report.

TRANSPORTATION FACILITIES

There are two types of roadways that are of significance in the East Everglades moratorium area. The first type consists of principal arterials which cross the area in order to connect Dade County with other portions of the State. The second type consists of those roadways which provide access to abutting properties. Existing roadways and programmed improvements will be discussed in this section of the report, while recommended facilities will be presented in a later section. All facilities will be discussed separately for each sub-area.

Existing Facilities

There are two main economic activities which can be presently found in the East Everglades Moratorium Area: quarrying operations and agricultural production. Generally, the quarrying operations are located east of Levee L-31-N and north of Kendall Drive (S.W. 88th Street). On the other hand, the agricultural production landholdings are generally found south of Kendall the moratorium area; thus, there are no four lane urban-type arterials to be found in the entire moratorium area.

Sub-area 1 contains two important intrastate roadways. The first one - U.S. 41 (Tamiami Trail) - provides a direct link between Miami and Naples on the Gulf Coast. This roadway, which at one time was the shortest link between Tampa and Miami, today is used mainly by persons traveling between Dade and the Southwest Florida counties. The increased congestion and safety problems resulting from the narrow 2 lane sections on this roadway and the crossing of several urbanized areas in the Gulf coast counties have resulted in most long-distance trips between Miami and Tampa, being made by way of other connecting routes, such as the Florida Turnpike, and Alligator Alley. Traffic counts taken by the Dade County Department of Traffic and Transportation in 1973 indicate that the Tamiami Trail west of Krome Avenue is carrying an average daily traffic total of over 3,900 cars and trucks. This average average daily traffic figure, however, does not indicate that at times of heavy demand, such as on Sunday evenings, when many travelers are returning from recreational trips, the two lane roadway is severely congested. This congestion does not result from any side friction effects due to abutting land uses or congested intersections but rather solely to the inadequate number of travel lanes. For this reason the Tamiami Trail is included in the list of both programmed and proposed improvements discussed in subsequent paragraphs.

The other important through roadway in Sub-area 1 is S.R. 27 (Ingraham Highway) which leads to the Flamingo recreation area in Everglades National Park. S.R. 27 is the two lane southwesterly extension of Krome Avenue past Homestead and provides only one of three roadway entrances into the National Park. (The other entrances are at Everglades City in Collier County and Shark River loop road off the Tamiami Trail). S.R. 27 is also only one of five roads crossing the canals and levees (C-111, L-31N, L-31W) on the east side of the Everglades National Park. The other four crossings occur at

the Tamiami Trail, Howard Drive (S.W. 136th Street), Richmond Drive (S.W. 152nd Street leading to Grossman Hammock), and Hainlin Mill Drive (S.W. 216th Street). All of these crossings are important because of the access that they provide to the agricultural parcels west of the levees and the possible intensification of such activities in this sensitive area. These roads may also act as dams preventing the sheet flow of water vital to the Everglades National Park. This accusation was made concerning the road just completed by the Context Realty Company intruding into Taylor Slough. Many of these roads or crossings are presently nothing more than improved two lane trails. The condition of the roadway surface, however, is not as important in this area as it would be in other more urbanized areas where heavy traffic demands would require that paved roads be provided. Rather, the importance of these roads lies in the increased accessibility which they provide to the area west of the levees.

This increased accessibility and its attendant results are all too evident in Sub-area 2. Here, the excellent access provided to Krome Avenue by Kendall Drive, a four lane arterial, has made it convenient for many reasons to easily reach Krome Avenue from the urbanized areas of Dade County. From there, one can cross the levee by way of either Howard or Richmond Drives in order to reach the agricultural holdings west of the levee. The various paved and unpaved roads which bisect Sub-area 2 have even been extended to the very edge of the Everglades.

Sub-area 3 is important from a transportation viewpoint mainly because it contains the intersection of Krome Avenue and the Tamiami Trail. According to statistics compiled by the Public Safety Department, this intersection was one of the highest accident locations in 1973 due to the large amounts of traffic carried by both roadways, especially on weekends. Futhermore this is the only intersection provided on Krome Avenue between the Tamiami Trail and Kendall Drive and between Tamiami Trail and U.S. 27.

Sub-area 4 contains only one principal arterial - Krome Avenue (S.R. 27). The only other roadways in the area lead to the Lehigh Cement Plant located at approximately N.W. 12th Street and N.W. 157th Avenue. The Homestead Extension of Florida's Turnpike (H.E.F.T.), which forms part of the eastern boundary of the Sub-area, does not have any interchanges presently open between the Tamiami Trail and Okeechobee Road (U.S. 27). Thus the Turnpike Extension does not presently provide any access opportunities to this Sub-area.

Programmed Improvements

Only two major roadway improvements have been proposed for the next five years by either state or county transportation agencies in or near Sub-areas 1 through 4; however, neither roadway project has been programmed.

The first proposed improvement consists of widening Krome Avenue by two lanes to four lanes between Homestead and Kendall Drive. However, Krome Avenue is a primary road under the responsibility of the Florida Department of Transportation. Since this proposed improvement was made by the Dade

County Public Works Department, but was not programmed by the Florida D.O.T., it remains in the proposal stage. Furthermore, it is very unlikely that the county will pay for improvements of a primary roadway that is the responsibility of the state when other, more pressing, priorities demand that county funds be expanded on secondary roadways.

The second proposed improvement would be to widen the Tamiami Trail from two to four lanes between Krome Avenue and the Dade County line. Again, this proposal made by Dade County has not been programmed by the Florida D.O.T.

Very little residential subdivision activity has occurred in the four sub-areas. Thus Dade County has not provided any arterials in the four Sub-areas except for one road leading to Grossman Hammock. The more pressing necessity for roadway improvements in the more urbanized portions of Dade County is also reflected in the fact that no roadway improvements have been programmed for these four sub-areas by Dade County for the next five years.

Recommended Facilities

Due to the sensitive ecological nature of the four sub-areas the primary objective of any transportation element of this study's recommendations would have to be that access to the Sub-areas should be restricted. For this reason, more detailed recommendations are listed below.

First, intra-county or intra-state routes that cross the moratorium area should be built as controlled access facilities in order to minimize the development of abutting property or the resultant safety problems on the roadway resulting from this side friction. This recommendation would apply to such roads as the Tamiami Trail west of Krome Avenue and Krome Avenue north of the Tamiami Trail. Furthermore, no widening of Krome Avenue is necessary between Homestead and Kendall Drive as proposed since existing and projected traffic figures indicate that Krome Avenue is not and will not be operating over design capacity (10,000 cars per day for a two lane roadway) until past 1985. However, the same is not true for the Tamiami Trail. Even with the construction of Interstate 75 across Alligator Alley, it is very likely that a constant increase in traffic volumes between Naples and Miami will require widening of this roadway to four lanes between Krome Avenue and the Dade County line. Thus, the Florida D.O.T. should include this improvement, also needed from a safety standpoint, in the next year's Five Year Work Program for Primary Roads.

Several grade crossings and potential interchanges have been proposed for the Homestead Extension of Florida's Turnpike (H.E.F.T.) that would severely affect Sub-area 4. These grade crossings - at N.W. 90, 74, 58, 41, and 25 streets should not be built because to do so would create strong pressures for urban development to occur in Sub-area 4. Due to the environmental sensitivity of the area, none of these streets should be extended west of the H.E.F.T.

The other type of roadway that would have a severe negative impact upon the natural environment of each of the four sub areas would be local access roadways. These roadways would have two detrimental effects. First, they would

make it possible for more agricultural or even urban activity to occur in an area not suite for it. Second, the road, unless properly constructed, would act as a dam preventing the sheet flow of water. Thus, two steps are recommended that would prevent these adverse effects. First, no more crossings should be provided across the levees L31-N, L31-W, and C-111 except for the five existing ones at the Tamiami Trail, Howard Drive, Richmond Drive, Hainlin Mill Drive and S.R. 27 (Ingraham Highway). No public roads should be extended west of the levees. Second, all the regulations that would apply to raods acting as impoundments in these four sub-areas should be adhered to; expecially those from Central and Southern Flood Control District and the recently proposed Dade County Ordinance (7432). The Flood Control District regulations, adopted by its Board on December 14, 1973 and first implemented on March 1, 1974, are contained in the publication Rules of the Central and Southern Florida Flood Control District Chapter 16CA. The Dade County ordinance would prohibit the alteration or construction without a permit of any road or works on private or public lands which is raised to or does obstruct, divert, impound or otherwise interfere, either continuously, seasonally or periodically, in any way with the natural flow of any of the county's surface waters. Other criteria applicable to roadways in these sub-areas have been defined in the Environmental Protection Guide as follows:

> "Transportation facilities which would retain, divert or otherwise block the surface water flow of a fifty year storm must provide for the reestablishment of sheet flow through the use of interceptor spreader systems or performance equivalent structures and shall provide for passage of stream, strand, or slough waters through the use of bridges, culverts, piling construction or performance equivalent structures or systems."

UTILITIES

Water and Sewer Facilities

Presently, the Moratorium Area has no existing water or sewage facilities capable of expansion to provide those services necessary for development. Water needs are met by individual shallow wells dug down into the Biscayne Aquifer. Waste water treatment is provided by either privately owned package treatment plants or septic tanks.

Proposed Water and Sewer Service

The Miami Dade Water and Sewer Authority has no present plans in its programmed timetable to provide water or sewer service to any portion of Sub-areas 1 and 2.

Between 1980 and 1983, the Miami-Dade Water and Sewer Authority has plans to construct a 24 inch sewer pipe west along Flagler Street to approximately 137th Avenue. Until the year 2000, if the expansion of sewer service goes according to plan, this will be the closest proposed sewer main capable of providing service to Sub-area 3.

Between 1991 and 2000 it is proposed that a 20 inch water main be constructed along Bird Road to approximately 155 Avenue. This main might be used to provide potable water to portions of Sub-area 3.

Sub-area 4 presently lacks both water and sewer service. Between now and 1977 two 48 inch water mains are planned, running west to a water treatment facility located at approximately N.W. 92 Street and N.W. 117 Avenue. A 36 inch water main is programmed for construction between 1982 and 1990 to run southward along 117 Avenue and in addition main 30 inches in diameter is planned along N.W. 92 Street.

Planned improvements for sewer service by the Miami-Dade Water and Sewer Authority include the construction of a secondary sewage treatment plant to be located at approximately N.W. 117th Avenue and N.W. 42 Street between 1983 and 1987. A 90 inch sewer main is also proposed to be constructed along N.W. 117 Avenue northward to approximately N.W. 93 Street.

Between 1980 and 1983 the Miami-Dade Water and Sewer Authority also plans to build a pump station and a 24 inch sewer main running west along Flagler Street to approximately 137 Avenue.

The proposed water treatment and waste water treatment facilities could be used to provide services to portions of Sub-area 4. However this will depend on the capacities and abilities of such a system to handle the needs of urban development to the east.

Until both water and sewer facilities are capable of providing services to Sub-areas 3 and 4, development within these areas should be limited. Portions of both of these Sub-areas will be intricately involved in the proposed backpumping plan and to insure water quality it would be advisable to prohibit septic tanks and package treatment plants which discharge effluent to the surface or groundwater system until the questions regarding water quality are answered.

EDUCATION

The only inhabited portion of the Moratorium Area is a scattering of homes north and northwest of Grossman Hammock Park. The parents of these school children living in this area drop their children off at Krome Avenue where the Dade County School Board transports them to Redlands Junior High and Redlands Elementary schools (24701 S.W. 167 Avenue), approximately seven miles away. Senior high school students are transported eight miles to South Dade Senior High (28401 S.W. 167 Avenue).

New school construction that could in the future absorb students from the housing development north of Grossman Hammock include:

A new junior high school, 144 Street and S.W. 137 Avenue, which is scheduled for completion by January 1976.

There are also plans for an addition to Redlands Elementary School which is expected to be completed by October 1978.

PARKS AND RECREATION

Two large park sites are located within the East Everglades Moratorium Area. One of these is the Trail Glade Rifle Range (675 acres) at Tamiami Trail and Krome Avenue and the other is Grossman Hammock (640 acres) located west of Krome Avenue and S.W. 168 Street. The Trail Glade Rifle Ranges are used mainly for for gun practice while Grossman Hammock is patronized for its camp grounds and for nature study. Both of thse parks are special purpose parks and at the present time there are no other parks existing or planned in the Moratorium Area.

As long as the Moratorium Area remains undeveloped there will not be a need for neighborhood and community parks. Should the Moratorium Area be opened up for development then the standard of 4.5 acres of park and public open space land per 1,000 residents should be adhered to.

It should be mentioned that much of the Moratorium Area is used for recreation activity particularily hunting and fishing. This undeveloped open space also serves a function as a cleaning zone for the Dade County Air Basin and an absorption mass for polluted water effluent. In addition, the private airport immediately south of Grossman Hammock is utilized by sport parachutist's and private flying clubs.

FIRE PROTECTION AND RESCUE SERVICES

The rapid suburban growth of Dade County has placed many local governments in a "catch up" situation with respect to providing public services. This is particularly the case concerning fire/rescue services. As a result the fire protection and rescue services coverage of the rural-suburban fringe areas of Dade County is often below desired standards.

Existing Fire Stations

Presently, three fire stations are either located within or contiguous to the central and southern portion of the East Everglades Moratorium Area. These

fire stations are equipped with special fire fighting apparatus for combating brush and wild land fires. Two of these fire stations are operated by the Florida Forestry Division of the State Department of Agriculture. These stations are located near the intersection of Tamiami Trail and Krome Avenue and at Lucille Drive and S.W. 192nd Avenue southwest of Florida City. The third station is located at the entrance to Everglades National Park on State Road 27 and is operated by the Park Service of the United States Department of Interior.

Response times from these three fire stations to the various sections of the Moratorium Area can vary considerably. Response times are not of crucial importance in containing brush fires. In general, fire suppression equipment is sufficient to extinguish brush and grass fires during the wet season. However, considerable assistance is sometimes needed from county and municipal fire departments during serious dry season fires. Response times from the Homestead municipal fire station and the county operated Florida City station to the southern portion of the Moratorium Area (Sub-area 1) is approximately 8 minutes. Response times from county fire stations to the central portions of the Moratorium Area (Sub-areas 2, 3, 4 and northern portion of Sub-area 1) are 20 minutes and longer. The above response times are adequate, provided fire engines are responding only to brush and wild land fires where life and property risks are minimal.

Proposed Fire Stations

The Metropolitan Dade County Fire Department Capital Improvement Program for fiscal years 1975 through 1980 shows plans for the construction or relocation of 17 fire stations. The construction of four of these stations will provide for a more acceptable response time of first arriving units to Moratorium Area brush fires. Following is a list of the four new fire stations indicating proposed construction completion dates and average response times to the Moratorium Areas.

West Bird Road Station S.W. 117th Avenue and Bird Road, 1976 - 10 minute response time to Sub-area 2 and northern portions of Sub-area 1.

West Kendall Station S.W. 127th Avenue and N. Kendall Drive, 1977 - 11 minutes to Sub-areas 2 and northern portions of Sub-area 1.

Doral Park N.W. 50th Street and 104th Avenue, 1977 - 1 minute response time to eastern portions of Sub-area 4.

Hialeah Gardens N.W. 103rd Street and 87th Avenue, 1977 - 6 minutes response time to eastern portions of Sub-area 4.

The above stations will help to improve fire protection coverage for those brush fires which occur in the moratorium areas. Coverage and response times generally are inadequate for protecting any urban developments in the moratorium areas. Protection of urban development usually requires a response time of three to five minutes.

Long range planning proposals for Metropolitan Dade County fire stations during the 1981-1990 interim include three fire stations that would be located near or within present Moratorium boundaries, however, the construction of these three fire stations is contingent upon urban development taking place in these areas.

POLICE PROTECTION

Police or public safety services remain below desired levels of service due to the rapid urbanization Dade County has experienced since World War II. Because of the vast area of Dade County police protection is usually limited in very low density and the undeveloped sections. With respect to the Moratorium Area there is no serious crime threat due to the almost total lack of human habitation in the area.

Presently both county and the State Highway police patrol along Krome Avenue and Okeechobee Road which allows for varying response times averaging five minutes to the Moratorium Area. In the Homestead area county police patrols operate along Palm Avenue (S.W. 244th Avenue), which permits response times to emergencies in the southern portion of the Moratorium Area (Sub-area 1) within desired standards. In addition, park ranges from Florida Forestry and the National Park Service patrol much of the Moratorium Area ever alert for fires, poachers and other inconsistances.

Sub-area 2

Because of the development presently occuring in Sub-Area 2 further discussion of the availability of police, fire and rescue services are warranted. North of Grossman Hammock is an area of housing or ranchette (small farms) development where police response time by motor vehicle is 10 or more minutes for an emergency. A shorter response time could occur via police helicopter from New Tamiami Airport. In the case of fire protection the response time from the nearest fire station (New Tamiami Airport) is estimated at 26 minutes. Desired response for police related emergencies is three minutes or less. For non police emergencies such as fire or rescue calls a response time of three minutes is considered excellent.

PART V: ENVIRONMENTAL GUIDELINES

INTRODUCTION

The purpose of these guidelines is to insure that future use of this East Everglades Moratorium Area does not adversely affect the fresh water supply of Dade County or the naturally functioning ecosystems which presently characterize the study area.

These guidelines, moreover, have important implications as they relate to the existing urban areas. It is intended that adherence to these guidelines will help alleviate, in areas to be developed, some of the characteristic urban problems such as air and water pollution.

COUNTY-WIDE GUIDELINES

The following guidelines are considered minimum guidelines and apply to all of Dade County except where a greater degree of protection is offered by a guideline within a specific environmental protection zone or subzone.

General Environmental Considerations

In case of a conflict between guidelines proposed herein and other criteria which are a proper exercise of authority of a governmental jurisdiction, the more restrictive criterion will govern.

The environmental impact of developments will be assessed under the proposed Dade County Development Impact Ordinance and the proposed Environmental Impact Ordinance.

Drainage, Flood Control, and Water Quality

The construction of additional canals, ditches or other waterways is permitted only in accordance with the guidelines established for each specific Environmental Protection Zone.

Minimum flood protection and water quality control on future developments is to be provided to the maximum extent possible through use of retention basins and/or grassy swale areas for handling surface water runoff. Undisturbed open space areas accompanying development may be used as retention basins. The degree of on-site retention will be a function of the site character and will depend on soil character, peak flow, storage volume, seepage rates, and water quality information as may be available from existing and future surface water runoff studies for Dade County.

The approval of inland water body construction shall be contingent upon meeting the following guidelines:

Bulkheading shall be discouraged.

Surface runoff from new developments to be handled in accordance with the previous guideline on minimum flood protection is to avoid to the maximum extent possible the diversion of runoff directly to a water body through the following design considerations:

Setbacks
Proper contouring
Swale areas
Retention basins

Vegetation and Site Alteration

Development is not permitted in the mangrove estuaries below mean high water except for the expansion of existing or the construction of already planned and funded public bay access facilities.

Within viable hammocks (less than 40 percent exotic vegetation) the following guidelines shall apply:

Viable hammocks are considered areas of high priority for public acquisition to be used as passive recreation areas.

A maximum 25 percent site alteration (includes any ground cover disturbance including structures, streets, sidewalks, parking, yards, etc.) is permitted within any viable hammock which is one acre or larger.

The altered area is, to the maximum extent possible, to be confined to the least viable areas.

Recognized standards dictate the type and amount of fill permitted around various tree species within the 25 percent maximum disturbed area.

Tree wells or contouring are to be used if fill is excessive.

Within impacted hammocks (40-60 percent exotic plants) construction is, to the maximum extent possible, to be confined to areas characterized by exotic vegetation. A maximum 50 percent site alteration is permitted.

Within stands of Dade County Pine of one acre or larger the following guidelines apply:

A maximum of 50 percent site alteration is permitted.

The altered area is, to the maximum extent possible, to be confined to the least viable areas.

A maximum of 6 inches of fill may be placed at the base of any pine tree during and after development.

Where fill exceeds 6 inches, tree wells or contouring may be considered as alternatives..

Within all areas of allowable site alterations the existing native vegetation is to be incorporated into the landscape plan of the development to the maximum degree possible.

Revegetation is to be accomplished with preexisting species or other suitable species except that the undesirable exotic species (see list below) are not to be replanted or propagated.

Ardisia (marlberry) - Ardisia Solanacea
Australian pine - Casuarina spp.
Bishopwood - Bischofia javanica
Brazilian pepper (holly) - Schinus terebinthfolius
Castor bean - Ricinus communis
Colubrina - Colubrina asiatica
Common snakeplant - Sanseviera trifasciata
Guava - Psidium guajava
Melaleuca (cajeput) - Melaleuca quinquenervia
Trailing wedelia - Wedelia trilobata

PRESERVATION ZONE GUIDELINES

These guidelines are considered minimum standards and apply to all preservation zone areas except where specific subzone guidelines offer a higher degree of protection for areas of greater environmental sensitivity. Any deviation from these guidelines must be justified in the Environmental Impact Ordinance.

No development is permitted which would remove or displace organic soils, native vegetation, and endangered species of wildlife. Restricted development includes, but is not limited to:

Rock pits or borrow pits
Paved surfaces or roadbeds
All structures

Passive recreation facilities and public facilities essential to public health, safety and welfare, approved under the Environmental Impact Ordinance, are regulated as follows:

> Where facilities for sanitary waste are necessary, self-contained facilities may be utilized.
>
> Transportation facilities which would retain, divert or otherwise block surface water flow of a 50 year storm must provide for the reestablishment of sheet flow through the use of interceptor spreader systems or performance equivalent structures and shall provide for passage of stream, strand or slough waters through the use of bridges, culverts, piling construction or performance equivalent structures or systems. Channelization of such areas shall be the minimum length necessary to maintain reasonable flow and prevent weed blockage.
>
> Placement of structures must be accomplished in a manner that will not adversely affect surface water flow or tidal

No activities which alter the depth, duration, or seasonality of inundation are permitted.

No tracked vehicles except for fire fighting purposes are permitted off roadways.

CONSERVATION ZONE GUIDELINES

No septic tanks, package treatment plants, dumps or sanitary landfills are permitted in these zones. Self-contained waste treatment systems may be permitted.

Site alteration is limited to 25 percent of any given tract.

There is to be no further destruction of tree islands, bay heads, and willow heads.

High maintenance landscaping is discouraged and revegetation with native vegetation is encouraged to minimize water consumed for sprinkling and the necessity to fertilize.

Water control facilties within this zone are limited to water conveyance facilities (e.g., for backpumping) constructed solely for the purpose of water conservation of water quality control. Thus, water control for the sole purpose of providing flood protection for urban development, is not permitted. Such protection may only be realized through filling.

SUBMARGINAL DEVELOPMENT ZONE

No septic tanks or package treatments are permitted in this zone. Self-contained facilities may be permitted.

Site alteration is limited to 50 percent within any given tract in this zone. The disturbance should be, to the maximum extent possible, confined to those areas impacted by exotic vegetation and to areas not characterized by organic soils.

Tree islands are to be preserved to the greatest extent possible.

Water control facilities within these zones are limited to those additional facilities which will not potentially overload the primary and secondary drainage system now providing flood protection for Dade County.

PART VI: RECOMMENDED LAND USE PATTERNS

OVERVIEW

The recommended configuration of land uses shown in Figures 1-m1 to 1-m3 is consistent with the preliminary criteria established for the Environmental Protection Guide Part 2 of the Comprehensive Development Master Plan and is, essentially, based on the following factors: existing development trends, projected population growth within these areas, the availability of community facilities and services, ownership patterns, and the development of criteria based on environmental sensitivity as outlined in the Environmental Guidelines **pages 1-72 to 1-76. It also reflects the Recommended Metropolitan** Development Policies that were recently approved by the Planning Advisory Board. The following recommendations by Subarea reflect these factors.

SUB-AREA 1

Sub-area 1, the Preservation Zone which encompasses the Taylor Slough Basin and the Shark River Slough, should remain in open space with a limited set of land uses permitted. Intensive urban uses within this Sub-area should not be permitted. Agricultural uses which require the lowering of the water table and application of fertilizers or pesticides could have long range detrimental effects on Taylor Slough. Limited use of the area for livestock might be compatible if appropriate precautions were taken to handle animal wastes. The use of this Sub-area for rock pits or any other industrial use should not be permitted. The nature of the environment could not tolerate extensive alteration, nor could it tolerate an influx of human activity. The large expanses of land available in Dade County for all uses in areas far more suitable for urban development should preclude the need for developing this area.

Land-use controls can be accomplished by requiring construction in the area to comply with environmental guidelines under an Environmental Impact Ordinance. Because of the strong hydrological interdependence between this Sub-area (including Shark River Slough and Taylor Slough Basin) and the Everglades National Park, this relationship demands that special precautions be taken.

SUB-AREA 2

Although there is considerable interrelation between Sub-area 1 and Sub-area 2 the impacted character of the latter permits more diversified use than the former. Thus limited agricultural use, which would not require a lowering of the water table, may be permitted within this area. The area's designation as a Conservation Zone in the Environmental Protection Guides means that uses should remain predominately green belt and agricultural land. Limited residential uses not altering more than 25% of the surface area may be

considered if they do not show adverse impact under an Environmental Impact Statement. The use of the area for residential purposes should be limited to a 5 acre minimum lot size and should show minimal environmental impact.

Limited use of the area for limestone rock excavation if proper reclamation measures are taken may be permitted. The issuing of permits for this use should not be so extensive that they would destroy the natural character of the area.

SUB-AREA 3

The appropriate land uses within Sub-area 3 are based primarily on the designation of it as a Conservation and Submarginal Zone in the Environmental Protection Guide. Residential use should be limited to low density, preferably a single residential unit per 5 acre minimum. Within this area as well as in Sub-area 2, special precautions must be made in handling surface runoff to minimize adverse effects on water quality especially since this area will be tied into the proposed backpumping plan. Moreover, it is the aquifer recharge potential of the four Sub-areas which demands that limits be placed on surface alteration. Permitted use of agriculture may be considered compatible with Sub-area 3, although it would be preferable to concentrate these uses more to the south. Limited use of the area for rock excavation is permitted if previously mentioned precautions are taken. Although future use may be made of the Krome Avenue Tamiami Trail intersection for commercial use, there is no forseen need for such permitted land use prior to 1985.

SUB-AREA 4

Sub-area 4, designated a Conservation Zone by the Environmental Protection Guide should also remain predominately open space. Residential uses should not be encouraged within this Sub-area or any other portion of this Moratorium Study Area. Limited low density (one unit per five acres) accompanied by an Environmental Impact Statement may be permitted showing minimal environmental impact.

Excavations for limestone rock within Sub-area 4 should not be permitted west of the Dade-Broward Levee. East of the levee judicious approval of excavation permits should prevail. Although agricultural uses may be permitted east of the Dade-Broward Levee, water table alteration for such purposes should not be permitted. Thus, grazing or other agricultural uses not requiring major disturbance of the surface soils might be considered compatible. Heavy or light industrial uses, and commercial or intensive residential uses are not considered compatible with desired land uses in Sub-area 4.

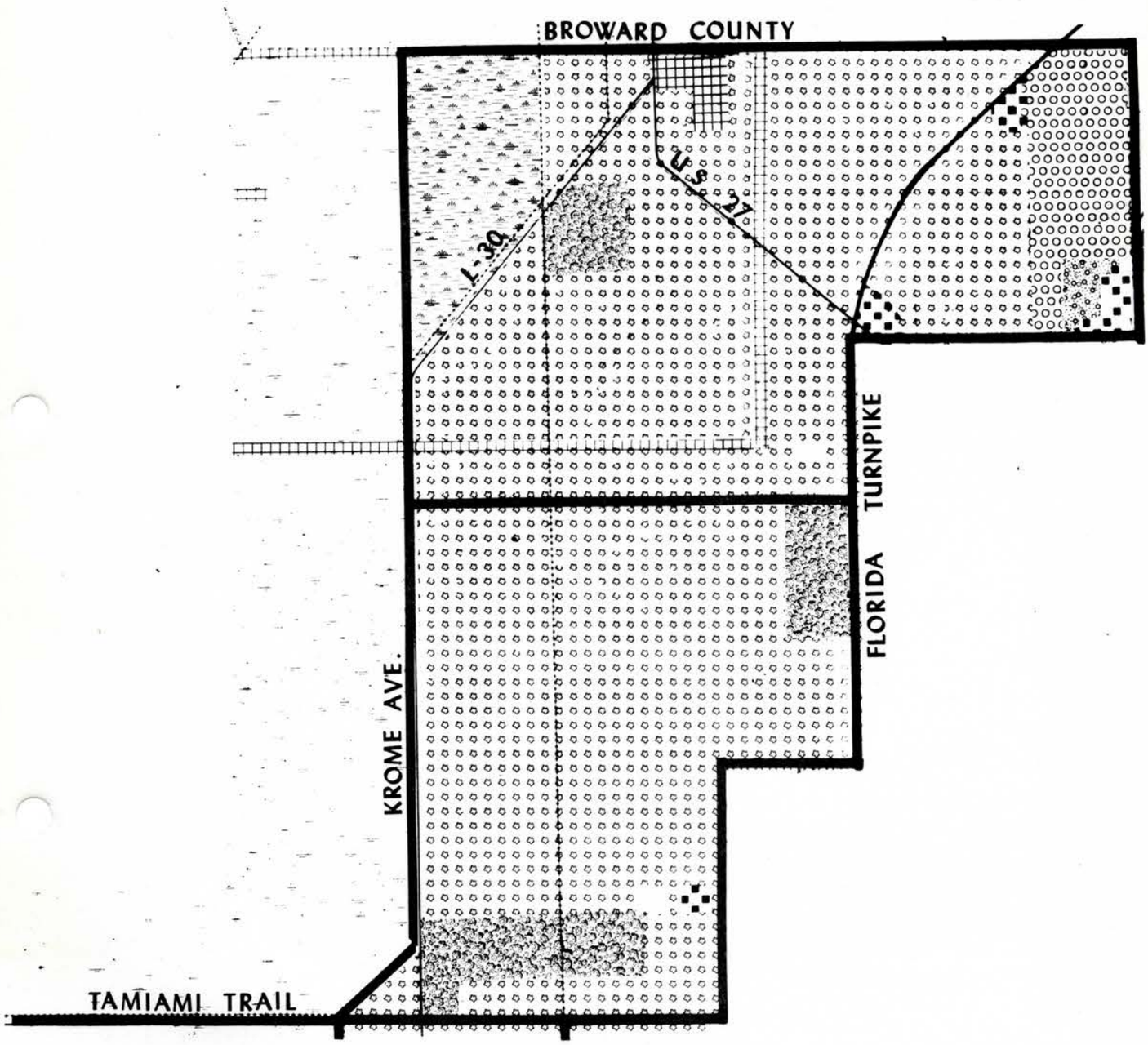
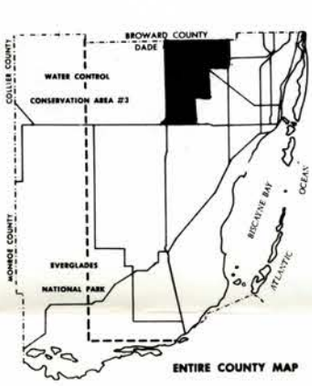


FIG. 1-M1



LEGEND

- PARKS AND RECREATION
- AGRICULTURE AND OPEN LAND
- PRESERVATION
- INDUSTRIAL AND BUSINESS
- LOW-MEDIUM DENSITY UP TO 5.0 DWELLING UNITS PER GROSS RESIDENTIAL ACRE
- MEDIUM DENSITY UP TO 11.0 DWELLING UNITS PER GROSS RESIDENTIAL ACRE
- TRANSPORTATION

RECOMMENDED LAND USE

EAST EVERGLADES MORATORIUM AREA

SCALE
0 1 2
IN MILES

N

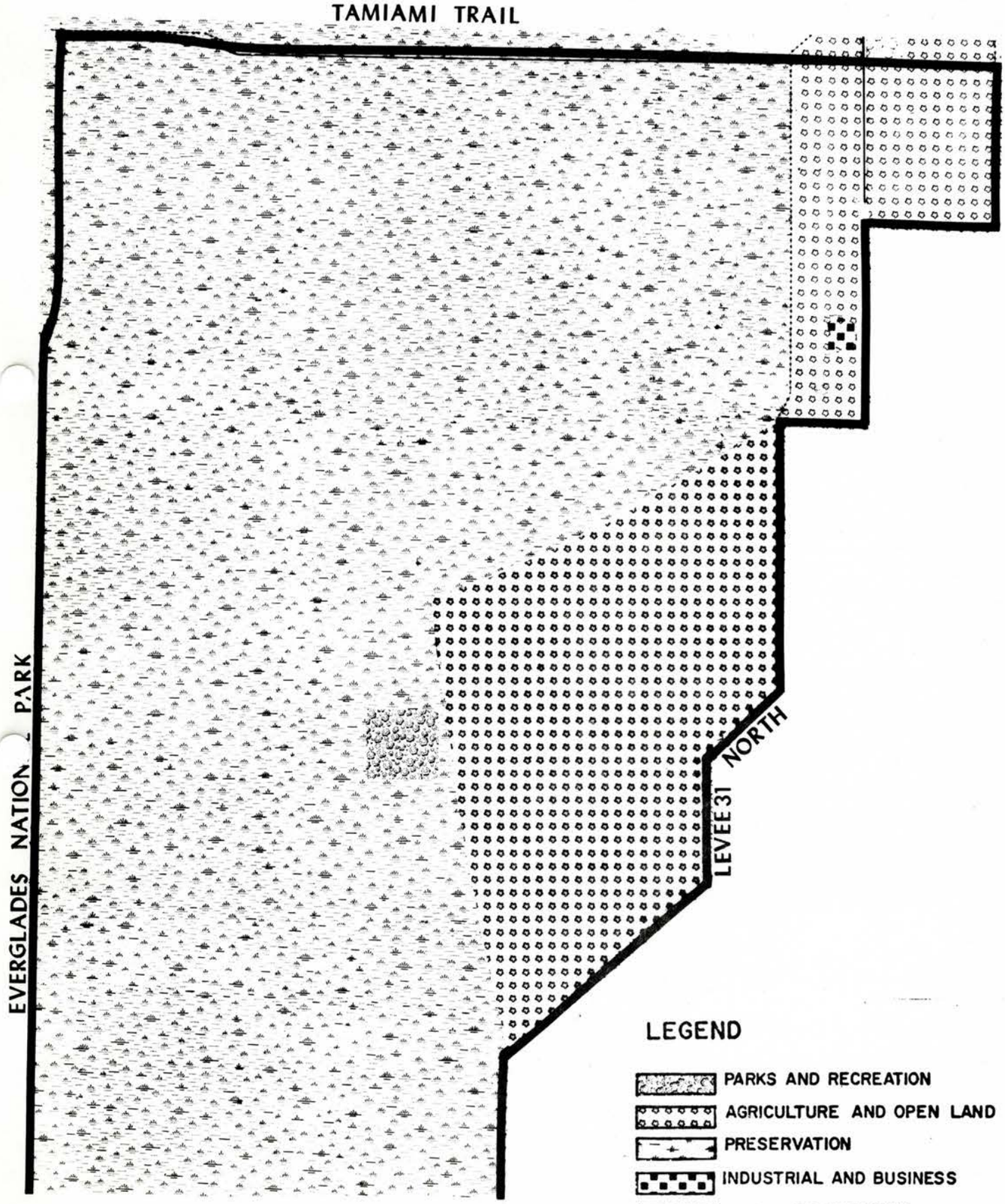
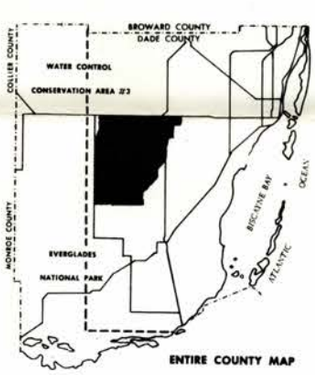


FIG. 1-M2



RECOMMENDED LAND USE

EAST EVERGLADES MORATORIUM AREA

SCALE
0 1 2
IN MILES

N

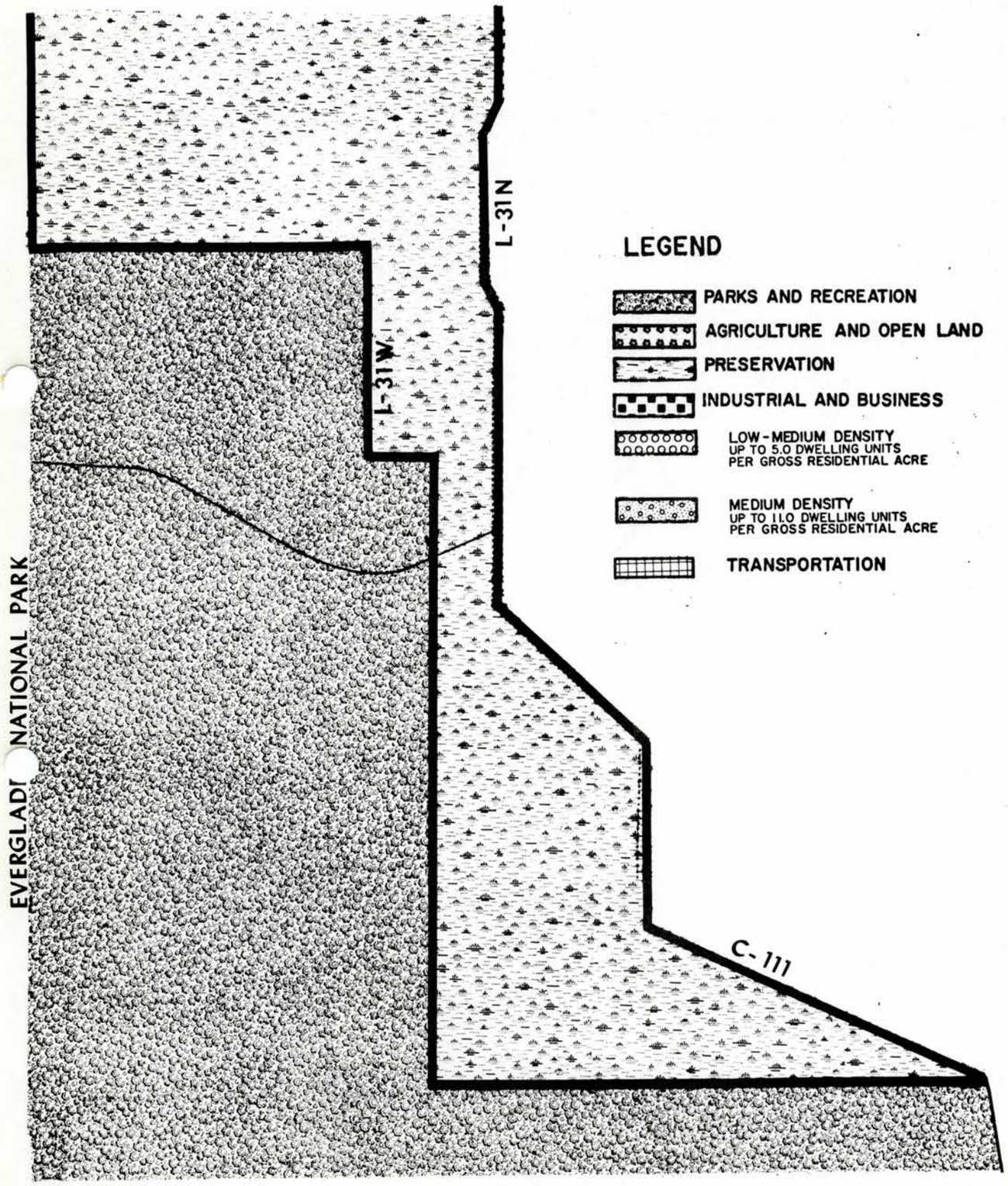
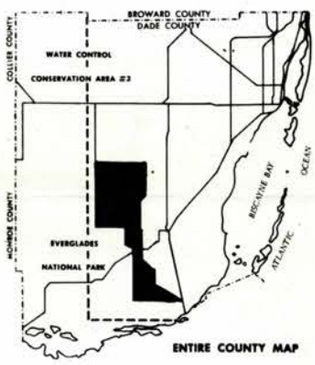
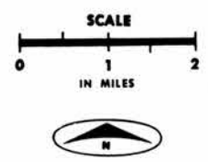


FIG. 1-M3



RECOMMENDED LAND USE

EAST EVERGLADES MORATORIUM AREA



PART VII: IMPLEMENTATION

OVERVIEW

The purpose of this section is to provide the tools necessary for implementing the recommended future land uses within the East Everglades Moratorium Area. Basically the section consists of two distinguishible elements. The first section contains the zoning changes necessary to eliminate conflicts between recommended land uses which would be incompatible with water supply and natural area protection. Thus this section recommends zoning changes or rollbacks of zoning which no longer maintains the use which was the basis for original approval. Such changes are recommended when the present use conflicts with water supply or natural area protection. The basis for determining potential conflicts with the natural environment is the Environmental Protection Guide and its recommended guidelines for uses within its delineated Environmental Protection Zones. Therefore, it is recommended that present zoning which permits uses in conflict with the recommended land uses in the Environmental Protection Guide be rezoned to the use most compatible with the protection of the applicable area.

The second part of the Implementation Chapter discusses various legal tools and their use in implementing recommendations for the moratorium areas that are not adequately addressed by zoning regulations.

RECOMMENDED REZONING

Parcel No. 1 - EU 1 to GU - 630 Acres - (See Figures 1-n1 and 1-n2)

This parcel, abutting the Tamiami Trail, was designated by the 1965 General Land Use Master Plan as the most restrictive category, that of agricultural and open space use; however, the area was still zoned EU-1. The land uses in that area have very little or no relation to the EU-1 zoning.

This strip is in the Shark River Slough preservation sub-zone, as recommended. The character of the area is basically a freshwater marsh typical of the Everglades. Although the sheet flow through this area is drastically altered by the Tamiami Canal and U.S. Highway 41, the Slough still maintains some sheet flow from rainfall that is supported by seepage from Conservation Area 3. This area is subject to periodic inundation and perhaps most important is the many endangered species of wildlife that are inhabitants.

This rezoning is not intended to imply that simply by rolling back a zone the land will be protected from environmental hazards. One residence per five acres throughout the Moratorium Area would still require access roads and disturbances which may cause significant damage to the natural environment.

We are just stating that GU zoning is the most appropriate tool at present. In the future stricter measures may be needed.

Parcel No. 2 - BU-2 to GU - 2 Acres - (See Figure 1-n1)

Presently, Parcel No. 2 has been zoned BU-2 since 1938. There is a service station, restaurant, and other tourists related businesses, on the site. This parcel is in Sub-area 1 which is designated a preservation zone. Following the same environmental and locational logic which applied to the previous EU-1 zoning, it is recommended that this parcel also be changed to GU. Accordingly the existing use would be permitted to continue as a legal non-conforming use.

Parcel No. 3 - BU-2 to GU - 2 Acres - (See Figure 1-n1)

During August, 1954, Parcel No. 3 was granted BU-2 zoning by Resolution 7353. There is presently a novelty shop on the site. As was the case in the other rezoning along the Tamiami Trail this parcel is in Sub-area 1 (Preservation Zone) and it is recommended that the BU-2 zone be changed to GU. The existing use would, again be permitted as a legal non-conforming use.

Parcel No. 4 - BU-2 to GU - 7 Acres - (See Figure 1-n1)

Parcel No. 4 has the original BU-2 zoning. There is presently a gas station and liquor store on the site. This parcel is adjacent the Tamiami Trail within the Sub-area 1 Preservation Zone, it is recommended that it be rezoned to GU. The existing use would be permitted as a legal non-conforming use.

Parcel No. 5 - BU-3 to GU - 2 Acres - (See Figure 1-n2)

Parcel No. 5 has had BU-3 zoning since 1938. A general store, bait and tackle shop and gas station presently are on the site. This parcel is also on the Tamiami Trail within Sub-area 1 on the Preservation Zone and is recommended to be rezoned to GU. The existing use would be permitted as a legal non-conforming use.

Parcel No. 6 - IU-2 to GU - 2006 Acres - (See Figure 1-n2)

This parcel consists of Government lots 2 thru 6, between Township 54, Range 38 and Township 55, Range 38, and the S.W. $\frac{1}{4}$ of Section 32, Township 54, Range 38. On lots 2 and 3 the request was made for a change in zoning from GU to IU-2 and a special permit for excavation purposes. This request was passed by the Board of County Commissioners on January 30, 1958 by resolution No. 933. A request was also made for a zoning change on lots 4, 5, and 6 and the S.W. $\frac{1}{4}$ of section 32 from GU to IU-2 with a special permit to permit an airport and business essential thereto. This request was passed September 4, 1958 by resolution number 2045.

This area is located within Sub-area 1 proposed Preservation Zone. The property lies within the Shark River Slough. This area has some of the most environmentally sensitive land in Dade County. Research has indicated that the land within this parcel has never been used for the uses initially requested to justify the change of zoning, nor have they been used in any industrial capacity. Based on these considerations, particularly the environmental sensitivity, it is hereby recommended that this area be rezoned to GU.

Parcel No. 7a - IU-3 to GU - 637 Acres -
Parcel No. 7b - IU-3 to GU - 960 Acres - (See Figures 1-n2 and 1-n3)
Parcel No. 8 - IU-3 to IU-2 - 800 Acres -

On September 6, 1956 by Resolution No. 10250 this 4 square mile parcel was rezoned to the present IU-3 zoning. The Portland Cement Plant asked that the entire property be rezoned to IU-3 but that, its use be limited and confined solely to the installation, maintainance and operation of a plant for the manufacture of cement, lime and related material and products and excavation necessary for such operation. In the last eighteen years the plant and excavations have been limited to approximately one of the original three sections which is delineated in Parcel 8 (See Figure 1n-3). This use could perform its same functions under the same conditions imposed upon IU-2 zoning. The IU-2 zoning would be a more logical classification for the kind of uses presently existing. Parcel 7a, one square mile of land in Section 35, 54, and 38, lies within Sub-area 1 of the proposed Preservation Sub-zone. Parcel 7b consists of approximately two sections of land within Sub-area 3, a proposed Sub-marginal Development Zone. The uses allowed in the IU-3 zones are much too liberal to allow in Preservation and Sub-marginal Development Zones. Parcels 7a and 7b, the portion of IU-3 which the cement company is not actively engaged in using, should be rezoned to GU, interim use. Additional permits would be evaluated when the company was desirous of expanding its use. Parcel 8 should also be rezoned to IU-2.

Parcel No. 9 - IU-3 to GU - 5973 Acres - (See Figure 1-n4)

The original Aerojet property, which totalled 75,000 acres, was rezoned in 1962 from GU and AU categories to IU-3 for the purpose of permitting all operations necessary to research, develop, manufacture, test, store and ship engines of all types including specifically but without limitation, solid and liquid rocket engines, space vehicles, etc. However, Aerojet was unsuccessful in its bid for government contract and on December 1, 1971 a director's application was filed to rezone most of the Aerojet property. What remains is the IU-3 zoning which is present today. This area has been reevaluated and is presently shown to be in one of the most environmentally sensitive areas in the county. It is designated as part of the Taylor Slough Basin Preservation Sub-zone. The importance of this area is primarily of an hydrological nature. This zoning has not been used for its original intent nor to further any uses that are permitted in an IU-3 district. Except for two uses the buildings which exist on the site have not been used for some time.

The two uses which presently exist are a building truss manufacturer and a research firm. Due to lack of adequate services and the desire not to perpetuate industrial uses in this area it is therefore recommended that the IU-3 district be rezoned to GU, interim district. The existing uses should be permitted to continue as a legal non-conforming use.

Parcel 10 - EU-1 to GU - 73 Acres - (See Figures 1-n3 and 1-n5)

The EU-1 zoning on this parcel was granted in April, 1951 by the Board of County Commissioners under resolutions 4257. There is currently no EU-1 use on this property.

Parcel 10 is situated in a Conservation Zone. The primary importance of this Zone is its recharge function to the Biscayne Aquifer and the maintenance of high water quality. It is extremely important that this area be allowed to continue in this capacity. Any alteration could have significant adverse consequences to water supply and quality. Therefore, it is recommended that the EU-1 zoning be changed to GU zoning. Again, this rezoning is not intended to imply that simply by rolling back a zone the land will be protected from environmental hazards. GU uses may allow environmentally dangerous disturbances; however, it is the most appropriate tool at present to implement the desired land use.

Parcel 11 - BU-2 to GU - 4 Acres - (See Figure 1-n3 and 1-n5)

The zoning on this parcel was a part of the original zoning enacted in 1933 by the County commissioners. There are currently no BU-2 uses on this land nor does it appear that there ever has been. This parcel also is located within the Conservation Zone with its attendant environmental considerations. Therefore, it is recommended that the zoning be changed from BU-2 to GU.

Parcel 12 - BU-3 to GU - 12 Acres - (See Figures 1-n3 and 1-n5)

The portion of this parcel south of Tamiami Trail and west of Krome Avenue was zoned BU-3 by the County Commission in August, 1958, under Resolution 1985. The original request was for a truck terminal on this property, which currently exists. The other areas of BU-3 were part of the original zoning for Dade County and there currently exists a service station, small motel, and other business uses.

This property lies within the Conservation Zone. This zone has been determined to be of significant importance regarding aquifer recharge and water quality. Realizing that there are commercial uses on this parcel, it is felt that a liberal business zoning is incompatible within the Conservation Zone. Therefore, it is recommended that the BU-3 zoning be changed to GU and the present uses be legal non-conforming uses.

Parcel 13 - EU-1 to GU - 370 Acres - (See Figures 1-n3 and 1-n5)

The zoning on this parcel was allowed by the County Commission in September, 1947 under resolution 2638, and April, 1951 under resolution 4257. Presently there are no EU-1 uses on this parcel.

As was the case for the other EU-1 zonings on Tamiami Trail, this parcel is in a Conservation Zone and the same conditions apply. Based on these considerations, it is recommended that the EU-1 zoning be changed to GU.

Parcel 14 - BU-1 to GU - 2 Acres - (See Figure 1-n3)

This parcel was zoned BU-1 in 1965 by the County Commission under resolution 205. The request for this zoning was made to allow the installation of a go-cart operation on the land; however, this parcel is presently being used as a restaurant.

This parcel is located in a Conservation Zone and subject, therefore, to its attendant concerns. It is felt that BU-1 zoning, Neighborhood Business and Shopping, is much too liberal zoning for a Conservation Zone. Bearing in mind the existing land use on this property, it is recommended that the BU-1 zoning be changed to GU with the restaurant continuing as a legal non-conforming use.

Parcel 15 - RU-4A to GU - 6 Acres - (See Figure 1-n3)

The zoning on this land was passed by the County Commissioners in October, 1956 under resolution 10456. There is currently a service station on this property.

This property is also situated in a Conservation Zone and the same considerations are applicable here that have been previously discussed for other parcels within this zone. Consequently, it is recommended that this parcel be rezoned to GU with the service station continuing as a legal non-conforming use.

Parcel 16 - IU-C to GU - 943 Acres - (See Figure 1-n3)

The zoning on this parcel was granted by the County Commission in February, 1959 under resolution 2751. The request was made so that this land could be used for industrial uses. There are no active IU-C uses currently on this land nor does it appear that the property was ever utilized in this capacity.

Most of this land lies within the Conservation Zone. As has been mentioned throughout this report, the Conservation Zone is vital to aquifer recharge and water quality. Due to the environmental considerations and the fact that this land has neven been in an industrial use, it is recommended that the zoning be changed from IU-C to GU.

Parcel 17 - IU-2 to GU - 400 Acres - (See Figure 1-n5)

This parcel is on Government Lot 3 between Township 53 and Township 54. The Board of County Commissioners Resolution No. 10982 on January 3, 1957 allowed a change of zone and special permit from GU to IU-2 (Heavy Manufacturing) to permit a rock excavation, manufacturing of rock products and for industrial uses. The resolution stipulated that the work should be carried on continuously and expeditionaly so that the entire project shall be completed within ten years.

To our knowledge this area has never been put to the use for which the region was requested. This area is in Sub-area 4, a designated Conservation Sub-zone, and is an important aquifer recharge area characterized by periodic inundation. This particular parcel acts as part of an important buffer between urban Dade County and the natural eco-systems within Conservation Area No. 3.

The IU-2 district allows much too liberal a variety of uses for a conservation area and therefore this parcel should be rezoned to GU, interim district.

Parcel 18 - IU-3 to GU - 2490 Acres - (See Figure 1-n5)
Parcel 19 - IU-3 to IU-2 - 640 Acres - (See Figure 1-n5)

These parcels were rezoned on March 22, 1956 for Lehigh Cement. The cement company asked that the entire property be zoned IU-3 but that its use be limited and confined solely to the installation, maintainance and operation of a plant for the manufacture of cement, lime and related material and products and excavations necessary for such operation. In the last eighteen years the plant and excavations have been limited to approximately three quarters of Section 34-53-39 which is delineated in Parcel 19.

Exactly the same logic applies to these parcels as applies to the parcels under the ownership of Portland Cement and the same rezonings are recommended. Therefore Parcel 18 is recommended to be rezoned to GU, interim use, and Parcel 19 is recommended to be rezoned to IU-2. If the industry wishes to expand, its application should be evaluated in light of the established environmental criteria and contingent upon the issuance of new permits.

Parcel 20 - RU-1 to GU - 30 Acres - (See Figure 1-n5)

The zoning on this parcel was granted by the Board of County Commissioners in November, 1958, under Resolution 2372. The request was originally IU-3 zoning on this site and one contiguous IU-1. However, the Commission determined that RU-1 zoning was more appropriate for this parcel. There are currently no RU-1 uses on this land, nor have there ever been.

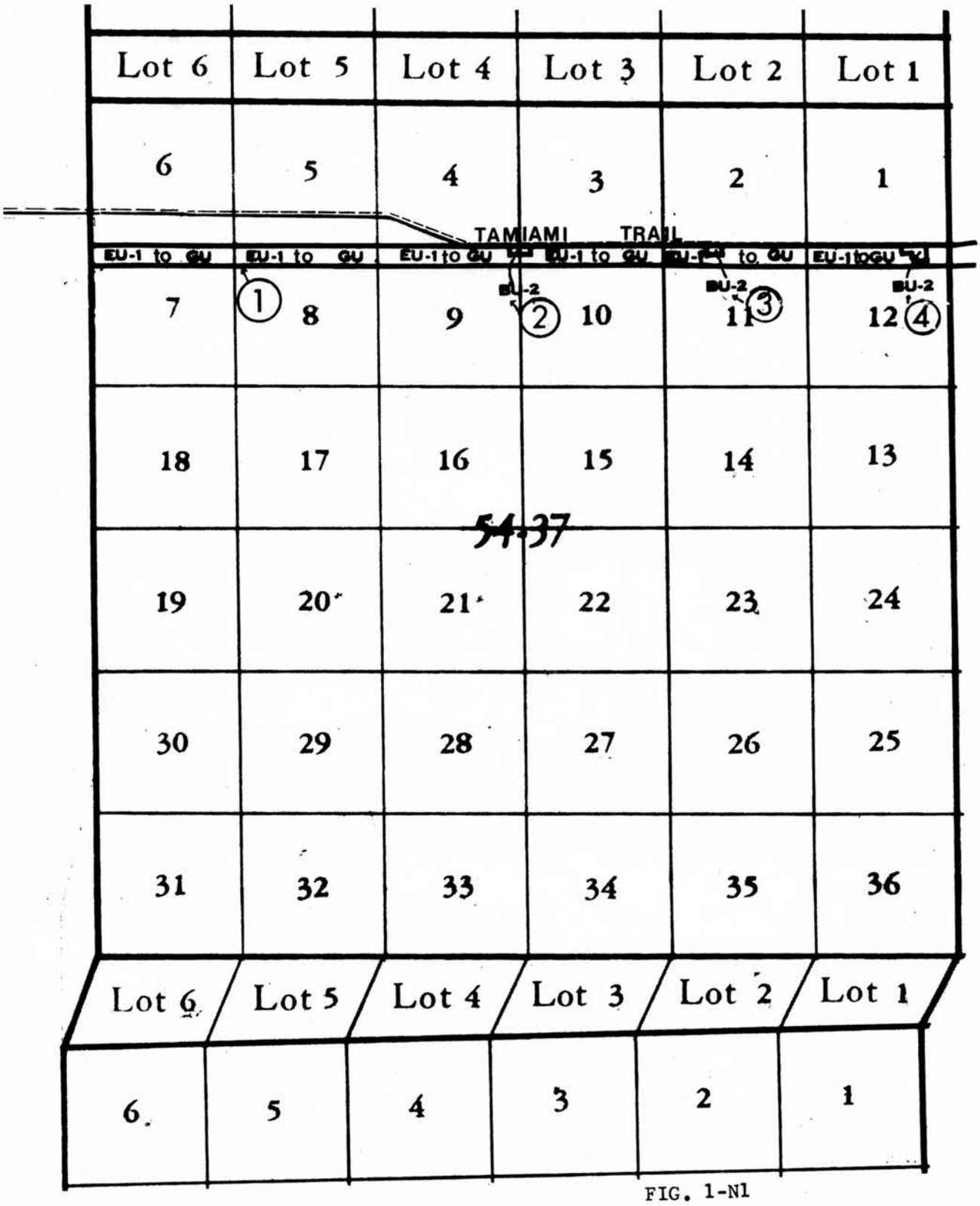
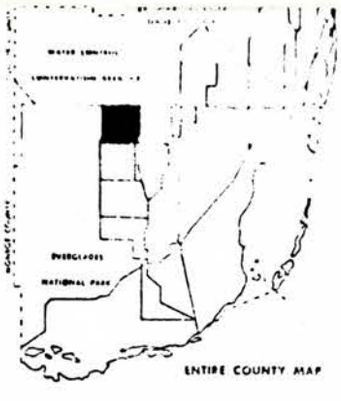


FIG. 1-N1

RECOMMENDED REZONING SUBAREA 1 54-37

Parcels 1,2,3,4 changed to GU



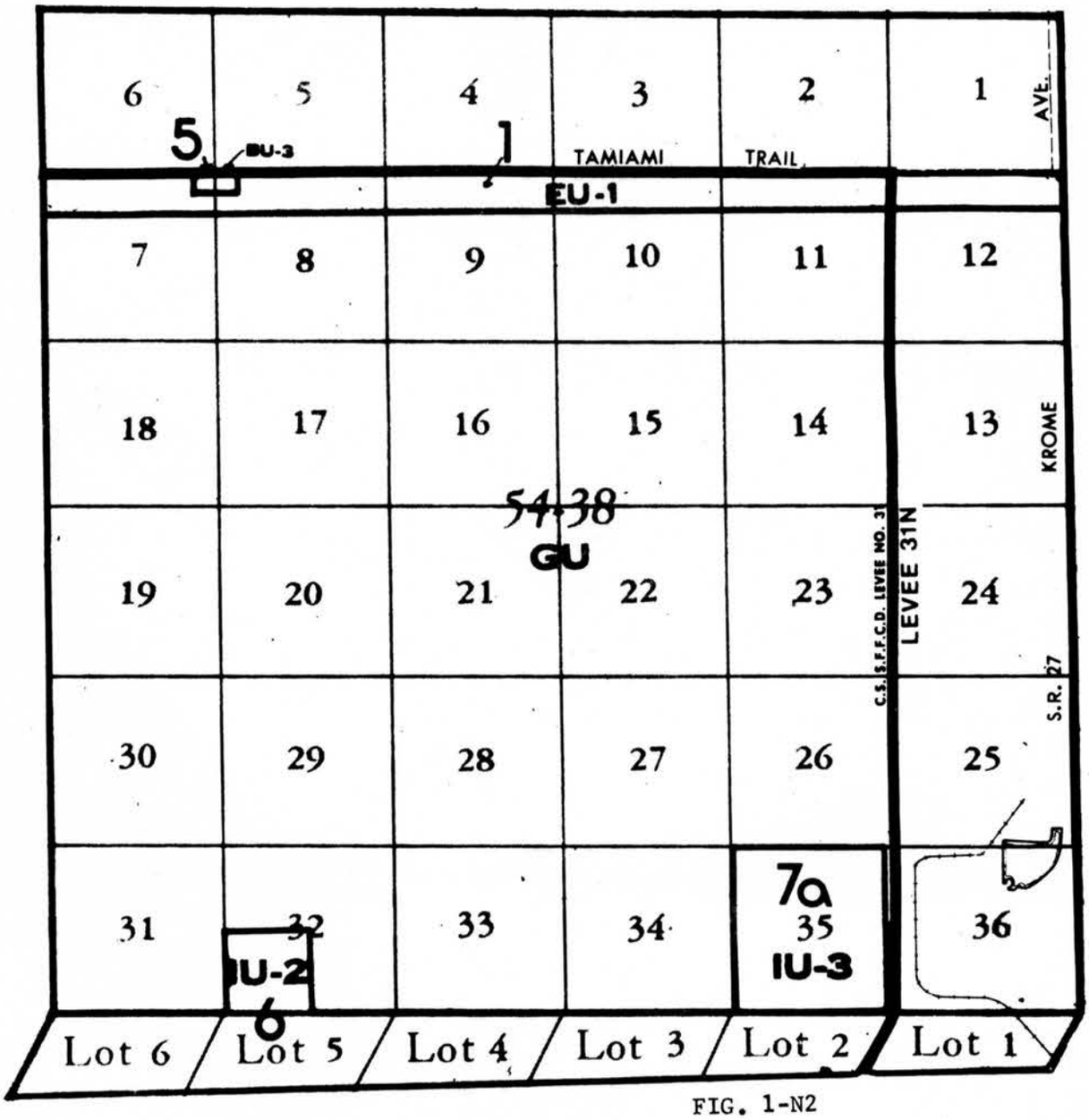
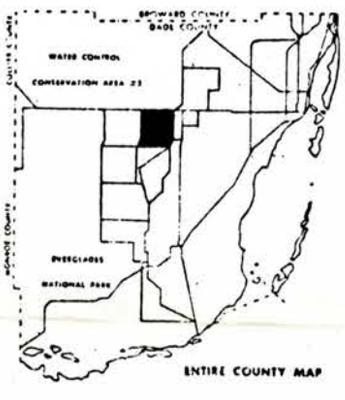


FIG. 1-N2

RECOMMENDED REZONING SUBAREA 1

54-38

Parcels 1,5,6,7a changed to GU



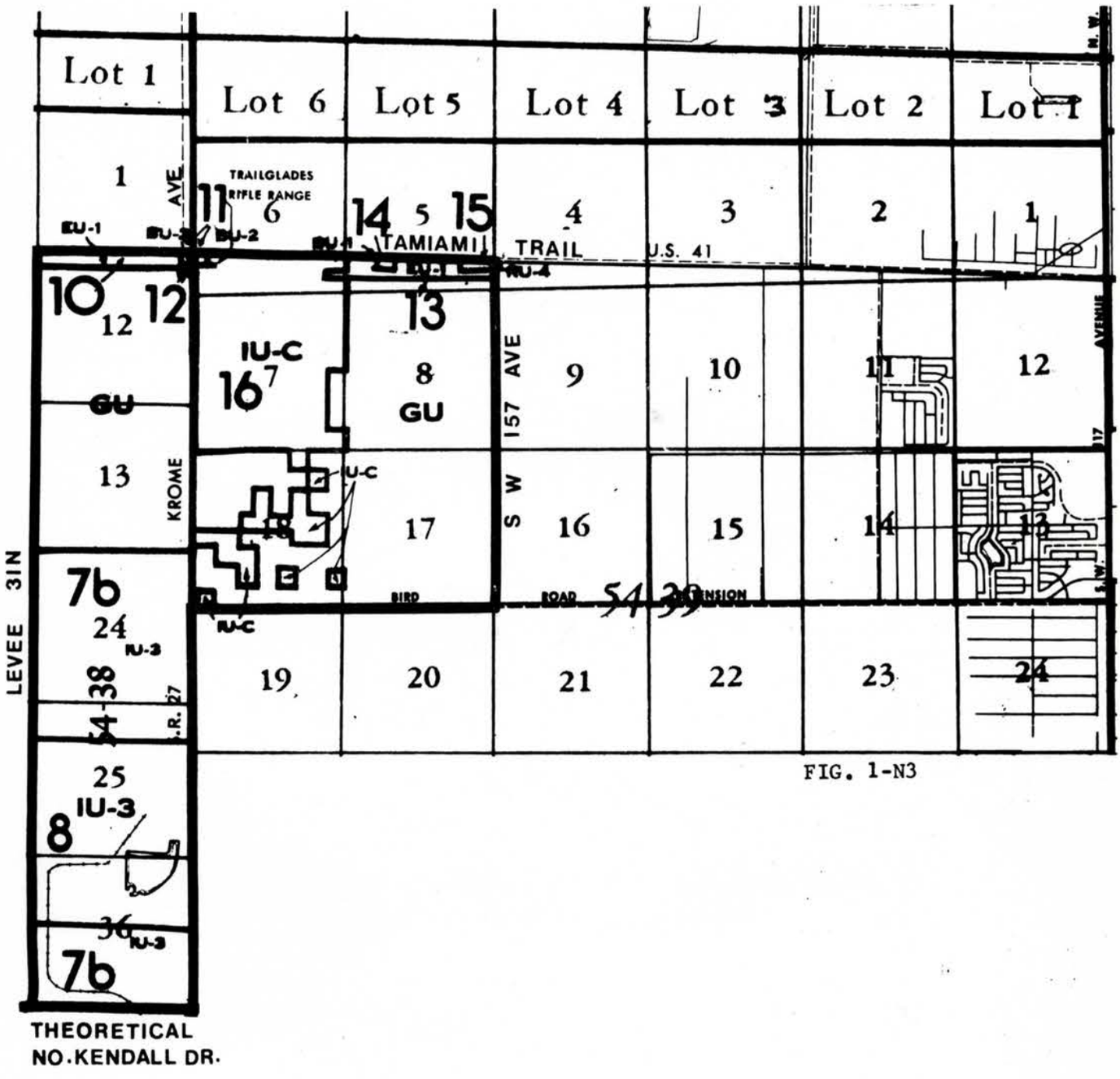
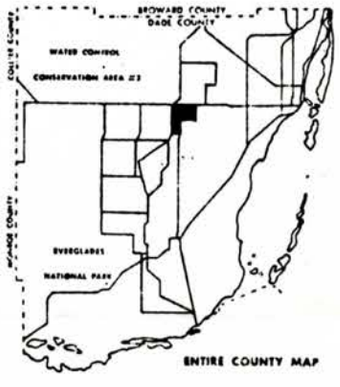


FIG. 1-N3

RECOMMENDED REZONING SUBAREA 3

54-38; 54-39

Parcels 7b, 10, 11, 12, 13, 14, 15, 16 changed to GU; 8 to IU-2



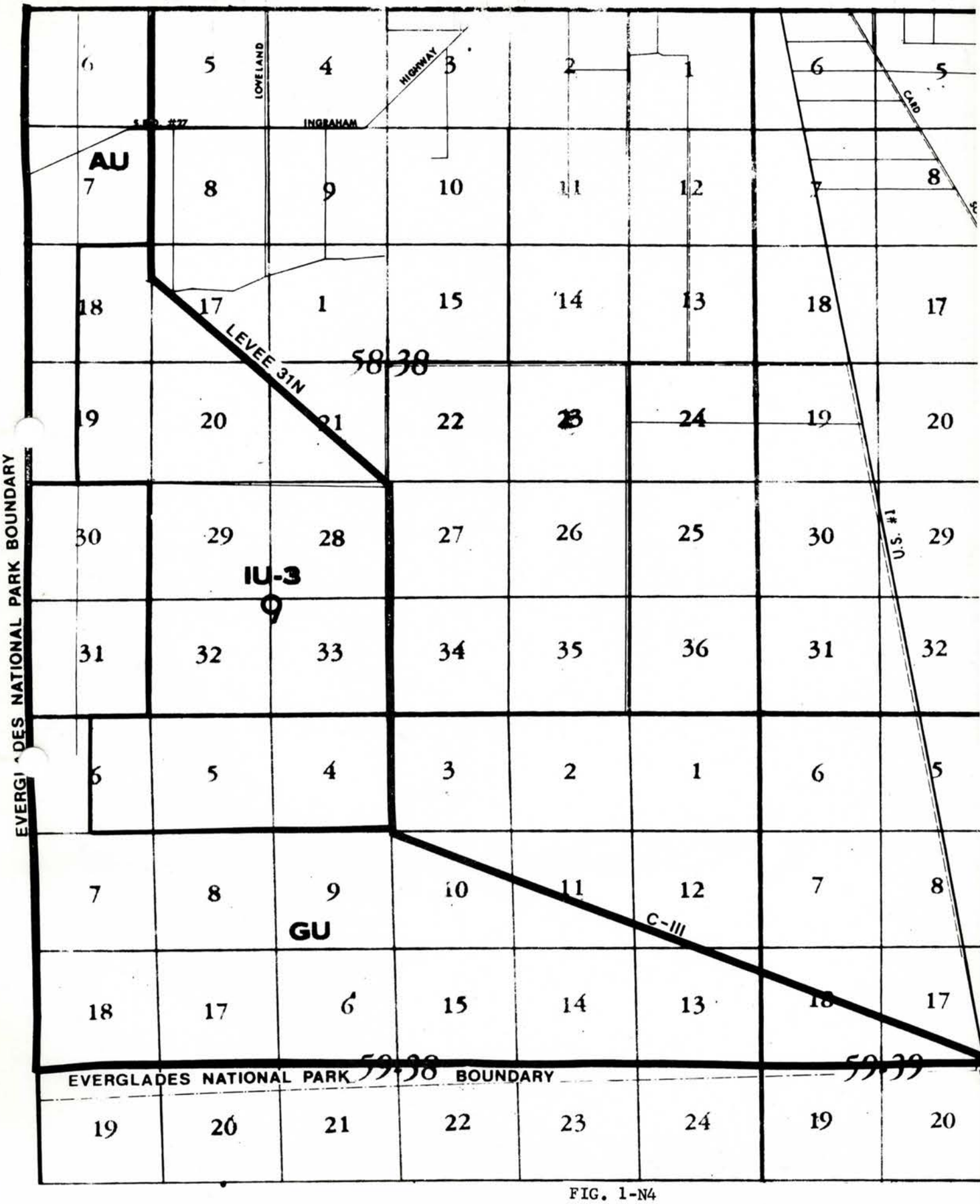
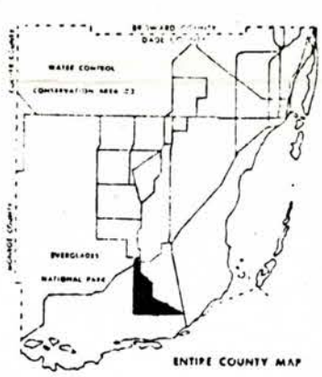


FIG. 1-N4

RECOMMENDED REZONING SUBAREA 1 58-38;59-38;59-39

Parcel 9 changed to GU



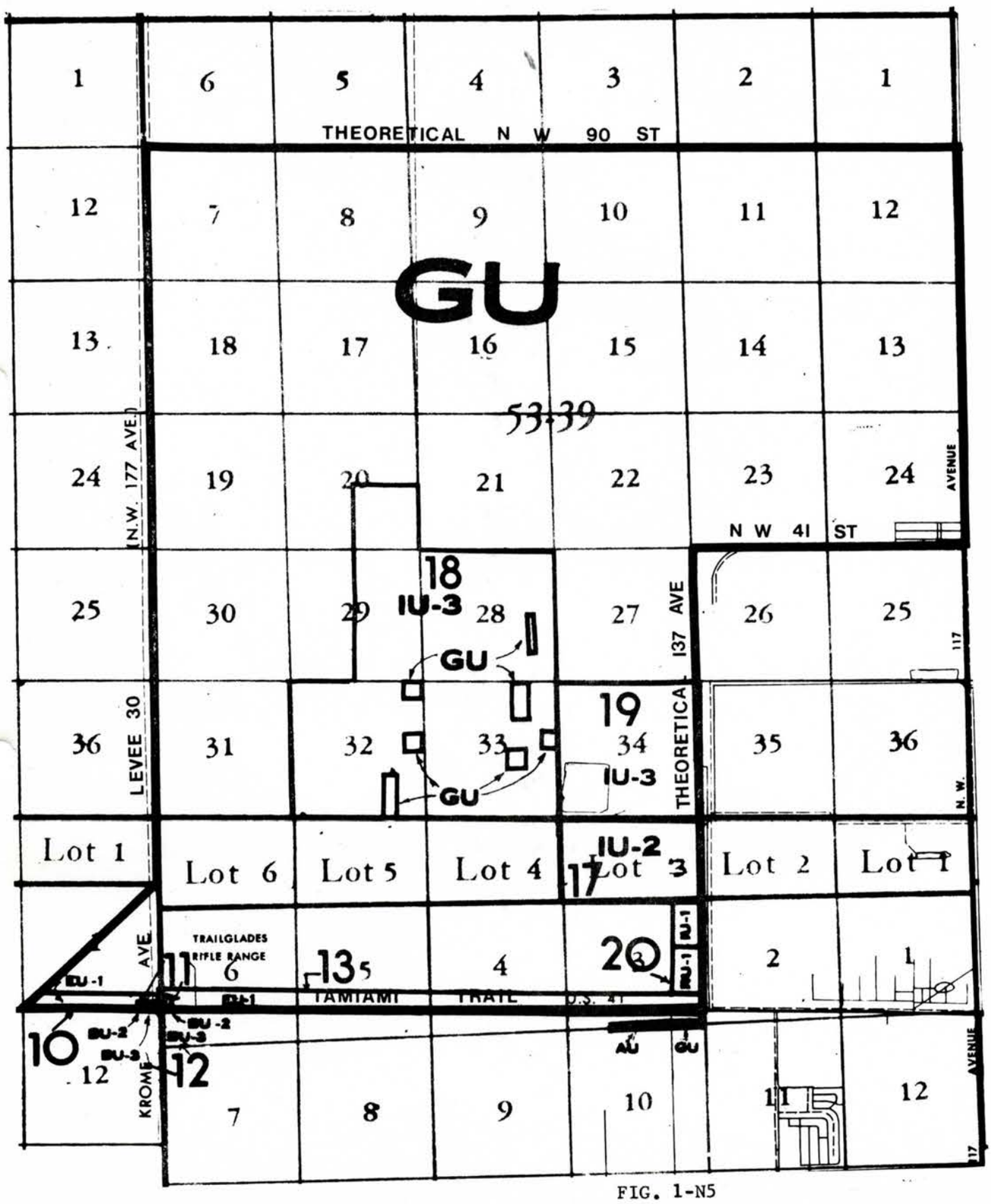
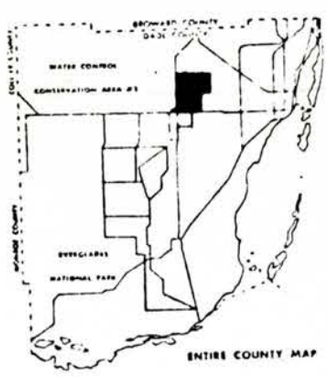


FIG. 1-N5

RECOMMENDED REZONING SUBAREA 4

53-39 ; 54-39

Parcels 10, 11, 12, 13, 17, 18, 20 changed to GU; 19 to IU-2



This parcel is situated in the Conservation Zone. As has been previously mentioned, this zone is of significant importance to water recharge and quality. Thus, based on the environmental considerations and the fact that there are no uses on this parcel, it is recommended that the RU-1 zoning be changed to GU.

RECOMMENDED LEGAL TOOLS

Following is a brief description of five legal tools that can be utilized to implement the recommendations proposed in this Moratorium Study.

Environmental Impact Ordinance

The tool which demands immediate attention and is of greatest importance in implementing key recommendations of this study is the Environmental Impact Ordinance. Ostensibly this ordinance will contain the elements necessary to provide substantial protection within designated Preservation and Conservation Environmental Protection Zones as well as within the unique vegetative associations of mangroves, hammocks, and pinelands. This law should, therefore, require the submission of an environmental impact statement which must justify the proposed activity within any area for which the law is applicable. The impact statement for activities within these areas of critical county concern must state all impacts on the natural environment and must justify any deviations from the guidelines for the designated areas as embodied in the Environmental Protection Guide (EPG). These deviations from permitted uses or recommended site alteration limitations must be thoroughly justified on scientific grounds. Although it cannot be assumed that maximum protection will be provided for these critical areas, substantial protection should be provided until legal research on all potential protection mechanisms can be completed. (See Appendix J: Ordinance Creating Areas of Critical Environmental Concern).

Special Zoning District

In such cases where adequate protection for the Conservation Environmental Protection Zone or for mangroves, hammocks, or pinelands cannot be provided through the Environmental Impact Ordinance, a second tool should be considered. This tool would be a special zoning district, a second tier of zoning, which would superimpose over all existing zoning districts the following regulations: first, any zoning permitted within the Conservation Zone delineated by this study would be subject to the site alteration limitation and all other guidelines presently applicable to the Conservation Zones; second, any zoning permitted within mangroves, hammocks, or pinelands would be subjected to previously recommended site alteration limitations and other regulations embodied in the guidelines for these areas. Such a tool would not specify permitted densities, this would be determined by existing zoning but would impose regulations over and above those embodied in the zoning district dictating permitted density.

Developmental Impact Ordinance

A Developmental Impact Ordinance, unlike the Environmental Impact Ordinance, should be enacted which would provide a systematic and comprehensive review process for development in all Dade County. The tool should require developments of more than 250 units and meet the standards set for the State of Florida's "Developments of Regional Impact" to submit an impact statement outling the impact the proposed project will have based on consideration of the following factors:

1. Natural characteristics, including geology, soils, hydrology, plant groupings, rare or endangered species, and wildlife habitats;

2. Changes in micro-climate, surface water runoff, natural vegetation, air quality, and effects on topography or landscape resulting from soil removal;

3. Design process and its relationship with the natural characteristics of the site and surrounding area;

4. sewage generation and capacity of treatment facilities;

5. Water consumption and availability;

6. Storm water runoff and retention;

7. Traffic generation and capacity of roads and public transportation facilities;

8. Projected school enrollment and capacity of existing facilities.

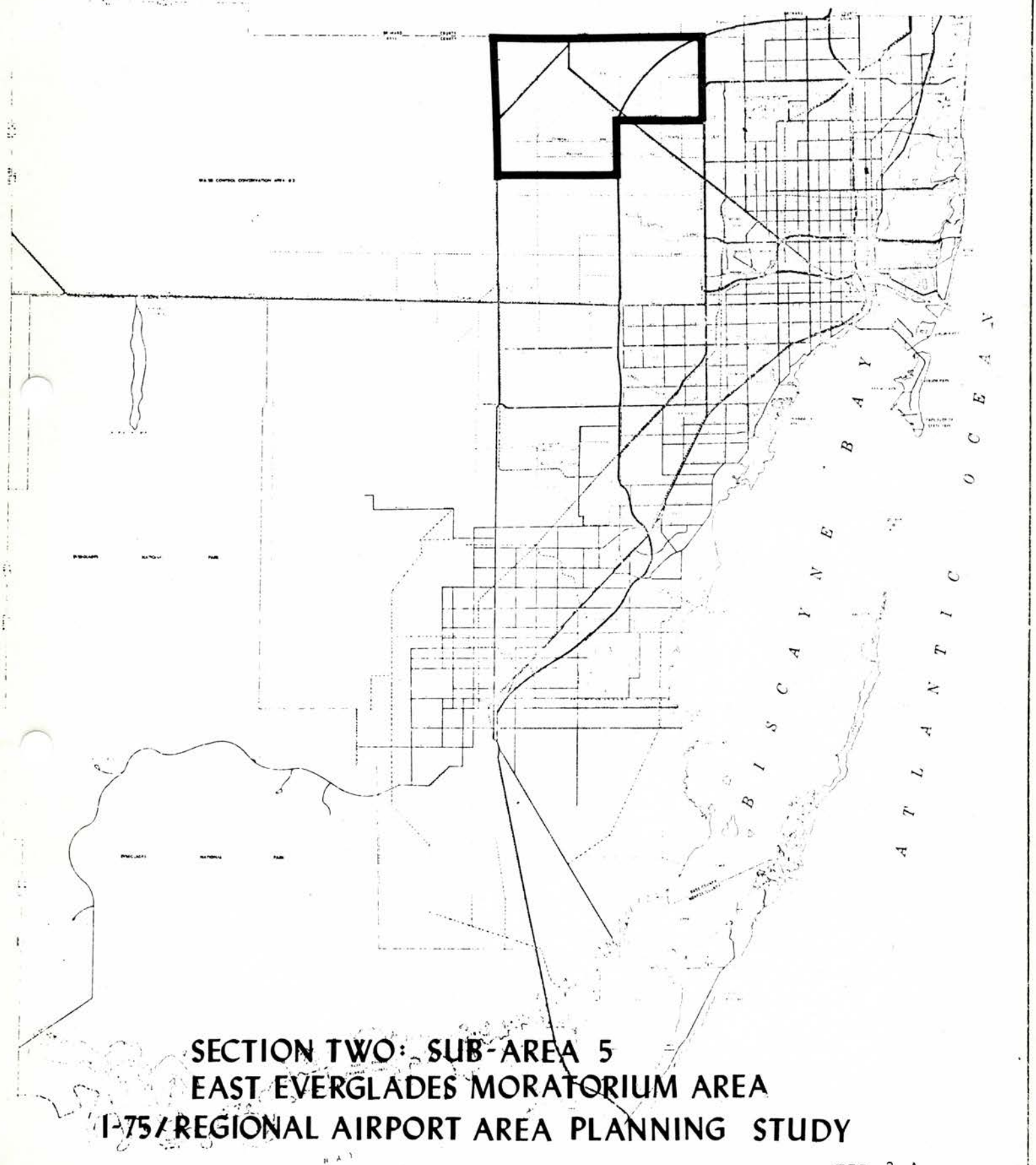
Wastewater Disposal Ordinances

Another area where protection is needed is the effective regulation of septic tanks and package treatment plants. Although some ongoing studies exist on the water quality effects of septic tanks these conclusions cannot be appropriately applied to areas off the coastal pine ridge where the most severe problems exist due to a high water table and low permeability soils. An ordinance should be adopted which would take a very conservative approach to permitting septic tanks; such action should insure that effective precautionary measures for the protection of our drinking water supply - the Biscayne Aquifer - are taken. The guidelines of the E.P.G. should be considered an appropriate

starting point with septic tanks to be prohibited from Preservation, Conservation, Submarginal, and Marginal Zones. Package treatment plants which presently come under county ordinance only in the requirement of a permit and a public hearing should be regulated more rigidly with them prohibited in Preservation, Conservation and Submarginal Zones.

Land Banking

Another implementation tool which could assure the realization of the goal to restrict development in the Conservation and Preservation Zones delineated in this study is land banking. Land banking by the County could be accomplished through the use of general obligation bonds and is the tool which in the long run has the greatest potential for preserving natural areas. Immediate investigation into the possibility of floating bonds for the purchase strategic lands in designated Preservation Zones and in some Conservation Zones should be pursued. Precedents for land banking is common, particualry in Canada and Europe. The extent to which the government in Dade County can become involved in land banking depends on powers granted by the State enabling legislation. However, if the powers are available, a program should be developed which would provide for the return of some purchased lands in the Conservation Zones to the private sector with restrictive covenants or deed restrictions accompanying the sales. The resale of land by the government would serve a two-fold purpose. First, it would avoid the legal complications involved in zoning where the restriction of an individual's use of this property may conflict with the constitutional rights of the individual to use that land. Second, through the use of covenants or deed restrictions, it would provide the County with an effective method of restricting the use of land to appropriate intensities of development. If implementing a land banking program proved to be time consuming and required drastic changes in governmental policy and responsibility, it could be preceded in the interim by zoning changes or other implementation tools. Ultimately, the consideration of public purchase may be necessary in the Preservation Zones.



SECTION TWO: SUB-AREA 5
EAST EVERGLADES MORATORIUM AREA
I-75/REGIONAL AIRPORT AREA PLANNING STUDY

FIG. 2-A

Metropolitan Dade County Planning Department

BACKGROUND

On July 31, 1973, following extensive planning studies and public hearings, the Board of County Commissioners made an important joint decision. They approved a site in Northwest Dade County for a proposed regional airport in the event a supplemental commercial airport will be needed to serve this community after 1990, and they also approved the relocation of a training runway from the Dade-Collier location in the Everglades to the proposed airport site. This decision qualified the County for 100 percent federal funding for site acquisition of almost 50 square miles of land. With the exception of the training strip, this property will serve as a land bank - a preservation of public land for future use if needed.

As a result of this action, the I-75/Regional Airport Area Planning Study was initiated on August 9, 1973 after the County Manager imposed an administrative zoning moratorium and instructed that all County Departments, Boards and Agencies refrain from considering any zoning changes in the area of the proposed regional airport. A building moratorium was also initiated by the County Manager on August 27, 1973 for a small parcel (approximately 100 acres) within the study area. These moratoria were ratified by the Board of County Commissioners at a public hearing held on October 2, 1973, and extended on January 29, 1974, to provide the Planning Department with the opportunity to conduct an extensive analysis of the area including land use and to develop a policy plan to guide future development in the study area. An area study was considered necessary within and around the proposed site to insure compatibility with potential airport development, as well as the existing and probable growth patterns in North Dade County. The study was also undertaken to evaluate the appropriateness of existing zoning as well as the impact of the newly constructed Florida Turnpike Extension and proposed I-75 corridor. On March 19, 1974 the subject moratorium area became a part of the larger East Everglades Building Moratorium Area. (See figure 2-a).

SCOPE OF STUDY

Under instructions from the County Manager and the Board of County Commissioners, the Planning Department has prepared this sub-area land use study in conjunction with the updating of the General Land Use Master Plan. This study follows the same planning process and utilizes the same general format as the Master Plan. Upon completion, the Plan will consist of the following three sections which are explained in detail in Appendix G: Part I, Metropolitan Development Policies; Part II, Environmental Protection Guide; and Part III, Metropolitan Development Guide.

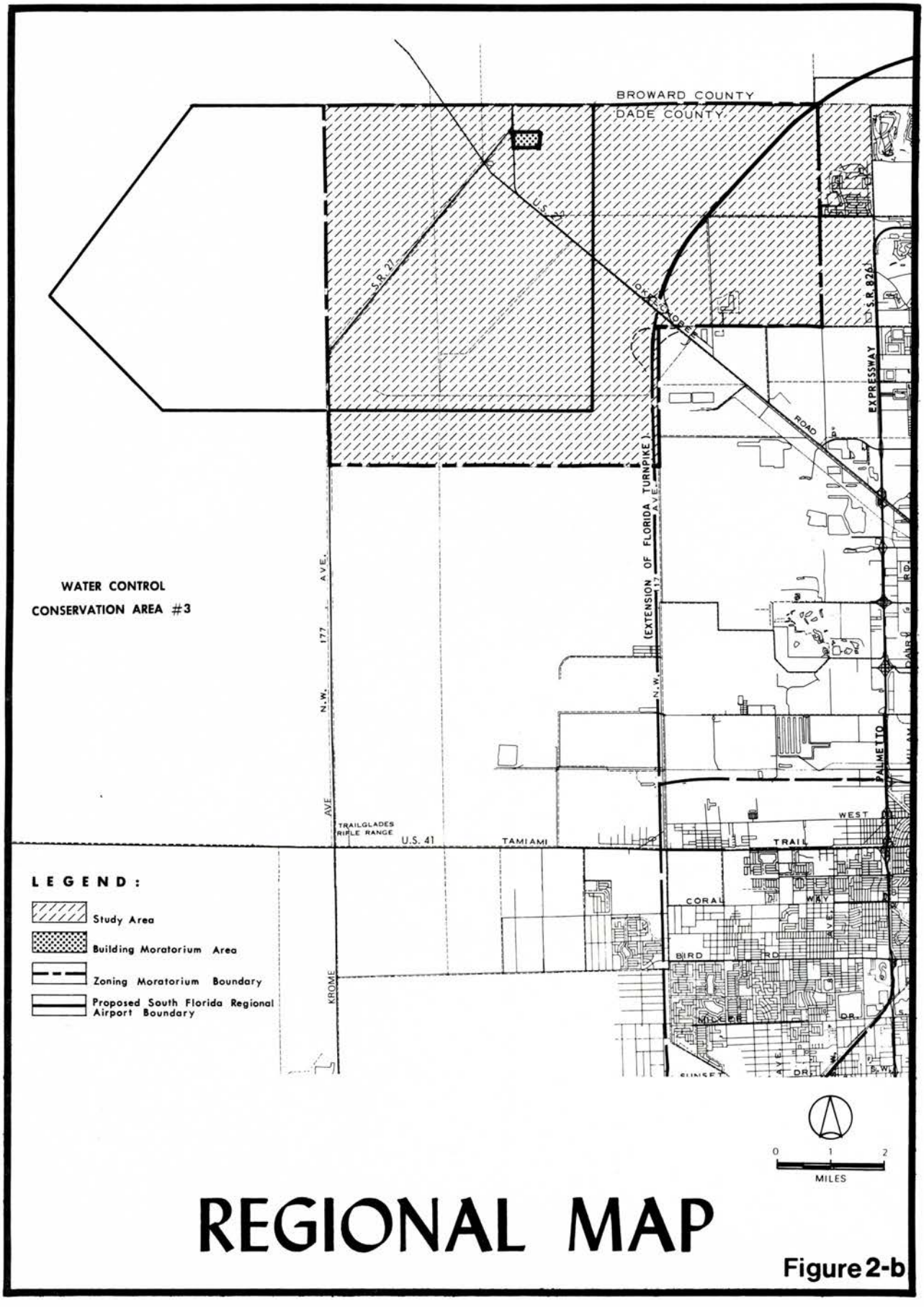
Those recommended Metropolitan Development Policies for Dade County which are considered applicable to the study area have been utilized in conjunction with an inventory and analysis of natural and urban environmental conditions and trends as guidelines for determining recommended land use patterns. The policy plan presented in this report provides a development guide consistent with the updating of the General Land Use Master Plan and is compatible with the existing and projected growth patterns in this section of the County, including those created by existing and proposed transportation corridors such as the Florida Turnpike I-75 extensions. The plan is very much in tune with natural environmental factors and the lack of urban services. It recognizes the fact that the County Commission has not committed itself to a commercial jetport at this time and that an aircraft training runway will not considerably alter existing growth trends in this type of area. The implementation section primarily addresses the problem of transitional land uses existing in zoning districts which are not necessary for their operation and which could possibly be incompatible with the recommended land uses in the Development Guide and/or the surrounding area.

The Planning Department staff considers a land use compatibility study based on ultimate airport operations at the new site to be premature at this time. If and when there is a definite commitment to a commercial airport by the community decision makers and after an Airport Master Plan is prepared and approved by the County Commission, then a detailed land use compatibility study based on a jetport in the northwest portion of the County should be undertaken.

STUDY BOUNDARIES

The planning approach explained above was accomplished within the study boundaries depicted on the Regional Map in Figure 2-b. The territory involved in this study constitutes approximately 58 square miles or 37,120 acres in the northwestern part of Dade County. The land specifically covered by the zoning moratorium is bounded on the west by N. W. 177th Avenue, on the north by the Broward County line, on the east by N. W. 87th Avenue and the Homestead Extension of the Florida Turnpike (N. W. 117th Avenue) and on the south by N. W. 138th Street and approximately N. W. 95th Street.

The original building moratorium was initiated for a parcel of approximately 100 acres lying on the east side of Krome Avenue at U.S. 27 (Okeechobee Road). Legal descriptions of the original building and zoning moratoria are furnished in Appendix B.



REGIONAL MAP

Figure 2-b

For study purposes the Planning Department staff has included a four square mile area bordering the zoning moratorium on the east. This area is bounded on the west by 87th Avenue, on the north by N. W. 202nd Street, on the east by N. W. 77th Avenue and the Palmetto Expressway and on the south by N. W. 138th Street.

GENERAL OVERVIEW

At present, the study area is characterized mostly by undeveloped land with some residential settlements concentrated primarily in the eastern extremity. The primary focus of this section is on natural environmental conditions within the study area. The urban environment is studied as well.

The following pages explore the natural environmental character and the natural systems functioning within the region in an attempt to assess the impact which potential development could have on this environmentally sensitive portion of Dade County. This information is accompanied by a look at the urban environment, particularly existing land uses, zoning, ownership patterns, and community facilities and services. The provision (both the timing and location) of public services is one of the more significant factors determining the types of land uses which will be recommended in the study area.

NATURAL ENVIRONMENT

The I-75/Regional Airport Planning Study area is situated in a former portion of the Everglades drainage basin. A study of the environmental character and the natural systems functioning within this region is necessary in assessing the impact which potential development may have on this area. Within this environmentally sensitive region it will be necessary to look closely at the suitability of land for development based on soil conditions, water table level, water quality, flood hazard, and other environmental factors. The following section discusses those resource elements within the study area.

Because of the areas historical interrelatedness with the Everglades physiographic province a brief review of the Everglades and a discussion of the relationship of the study area to the Everglades is found in the following paragraphs.

The Everglades is a shallow limestone basin 40 miles wide and 110 miles long extending southward from Lake Okeechobee. The basin is surrounded by higher lands on the north, east and west. In the south the basin empties into Florida Bay. Originally the basin was a sea bottom dating back over one million years. This depression received deposits of limestone and sand during the high seas of interglacial periods when sea levels were as much as 100 to 200 feet above their present levels. When the sea level receded and these low lying basins emerged much of the original deposits were washed away. Generally speaking water drains from this area in a vast sheet moving southward to Florida Bay. Aquatic plants and

sawgrass thrive in this environment and their remains compose the peat and muck covering the Everglades today.

Formerly the I-75/Regional Airport Planning Study area was part of the Everglades Basin. However, with the construction of Levee 30 and Water Conservation Area 3-B the characteristic sheet flow movement was altered and the area was essentially cut-off from the basin. Prior to the construction of L-30 the natural system had been somewhat altered by the construction of the Tamiami Canal and the Miami Canal. These canals were constructed for the purpose of draining the Everglades thus creating agricultural land as well as protecting urban development to the east from possible flooding.

Geology and Soils

Geology

The study area lies along the transition zone between the Sandy Flatlands and the Atlantic Coastal Ridge to the east and the Everglades Basin or Shark River Slough to the west. Generalized land elevations within the study area are between four and six feet above mean sea level with the assumed altitude of the bedrock ranging between 0 and 2 feet above mean sea level. Soils on the site are predominantly shallow and deep phases of Everglades peat with scattered occurrences of Gandy peat underlying the tree islands.

The underlying bedrock of Miami Oolite occasionally outcrops at the surface where oxidation of the organic soils has occurred. In isolated pockets the peat and organic materials may approach 6 to 8 feet in depth. Everglades and Sandy Flatlands physiographic province usually refers to that area which has developed soils of organic peat over the oolistic limestone. The Sandy Flatlands have an average elevation between 5 and 10 feet with a layer of sand over the oolite between 3 and 4 feet in depth. Generally speaking the western limit of the Sandy Flatlands approximates the location of the Palmetto Expressway.

Underlying the I-75/Regional Airport Planning Study area as well as the greater portions of Dade and Broward County is the Biscayne Aquifer. The Biscayne Aquifer is a highly permeable water table aquifer consisting of solution-riddled limestone and calcareous sandstone and fairly numerous layers of unconsolidated sand. The thickness of the aquifer is greatest along the coast in the Miami area and northward in the vicinity of Fort Lauderdale, where it approaches 200 feet in places. The aquifer decreases in thickness gradually southward from Miami and rapidly westward in the Everglades. In the Everglades it thins out to a feather-edge in eastern Collier and Monroe counties.

Municipal and private water supplies are derived almost exclusively from wells drilled into the aquifer. The aquifer thickens from about 50 feet at the levee system on the west side of the study area to 90 feet on the east. The importance of the aquifer and the hydrology will be discussed later in this section.

Soil Description

Soils which have developed in the study area consist principally of phases of Everglades peat with minor occurrences of Davie fine sand. Due to the drainage and alteration of hydroperiod, much of these soils have been lost (see Figure 2-c).

Everglades peat (Ea).-- This soil has developed in the eastern part of the Everglades basin, from the remains of sawgrass, lily, sedge, and myrtle. It is closely associated with the Loxahatchee peats but differs from them chiefly in having a black or very dark brown non-fibrous peat surface layer. Everglades peat is very poorly drained and may be covered with water during many months of the year.

The surface layer varies from black to very dark brown in color and ranges from 6 to 18 inches in thickness. The second layer ranges from 30 to 54 inches and is brown to reddish brown. The limestone underlies the peat layers at depths ranging from 36 to 60 inches. Near the canals, where the water table has been lowered by artificial drainage, considerable oxidation of the organic material has taken place. As a result of this increased oxidation, the remaining peat has a higher mineral content, is less fibrous, and is more nearly black.

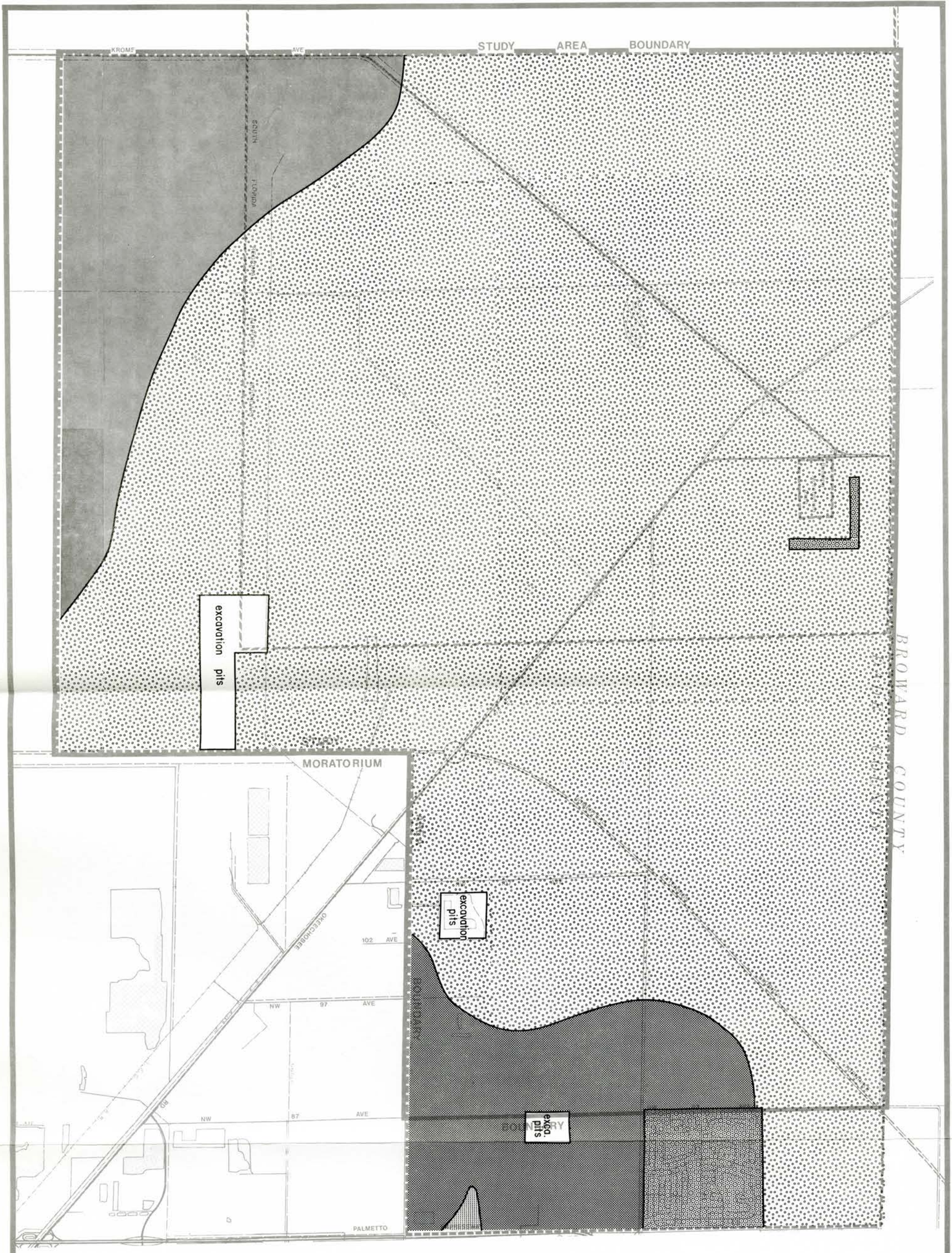
Profile description:

0 to 12 inches, black, finely divided, non-fibrous peat made up of fairly well decomposed plants; mineral content ranges from 6 to 15 percent; slightly acid to neutral; gradual transition to layer below.

12 to 40 inches, grayish-brown peat containing stems and leaves of sawgrass, lily, and sedge; slightly acid to neutral.

40 inches +, limestone.

Everglades peat, shallow phase (Ec). -- This soil differs from Everglades peat chiefly in having limestone at depths ranging from 12 to 36 inches. It occurs on the eastern edge of the study area adjacent to the Palmetto Expressway.



I-75 / REGIONAL AIRPORT AREA PLANNING STUDY

GENERALIZED SOILS MAP

THOUSANDS OF FEET

Dd	Ea	Ec	Ef	Mt
Davie mucky fine sand	Everglades peat	Everglades peat shallow phase	Everglades peat shallow phase over shallow sand	Made land

Figure 2-c

Everglades peat, shallow phase over shallow sand (Ef). --This soil occurs in association with the other Everglades peats and with the Davie soils near the eastern border of the study area. It differs from Everglades peat chiefly in having a thin peat mantle, less than 36 inches thick, that is separated from the underlying limestone by a thin layer of fine sand. This sand ranges from 6 to 24 inches in thickness.

Davie mucky fine sand (Dd). -- This soil occurs in the eastern portion of the study area along the Palmetto Expressway. It has developed from a thin mantle of marine sands deposited over limestone. The soil ranges from well drained to excessively drained.

The vegetation consists of second-growth slash pine, saw-palmetto, low cycads or coonties, and tall and short grasses. A few hammocks covered with live oak, cabbage palmetto, gumbo-limbo, and other hardwood trees are scattered throughout the area covered by this soil.

The shallow peat layer of this soil has not yet been completely destroyed by fire or by slow oxidation following drainage. The soil is poorly to very poorly drained. It is closely associated with the Davie fine sand and differs from that soil mainly in having a thin layer of peat or mucky material over the sandy layers. The depth of the limestone ranges from 24 to 48 inches.

Profile description:

0 to 6 inches, black muck or finely divided peat.

6 to 10 inches, gray nearly loose fine sand; slightly acid to neutral.

10 to 30 inches, light-gray loose fine sand; slightly acid but becomes neutral to alkaline with depth.

30 inches +, limestone.

Soil Significance

The importance of soils within the study area can only be alluded to. The organic peats and mucks are extremely important as they relate to water quality and quantity. The peats absorb water and swell up during the rainy season then slowly release the water during dry or drought season. The water levels aid in maintaining the head necessary to control salt water intrusion. The study area supplies water to both the surface water or canal system and the

underlying Biscayne Aquifer. Perhaps their most important function, however, is the soil's influence on water quality. Recent studies by Dr. Leonard Greenfield of the University of Miami Department of Biology and Dr. Curtis Hare, University of Miami Chemistry Department emphasize the importance of soils as they relate to water quality.* A summary of that report follows:

1. Soils have an ion exchange capacity that allow them to concentrate plant nutrients, small organic components, and various elements and radicals. The concentration is extremely high compared to that in water.

2. These substances are released slowly and sparingly into the surface and ground water so that concentrations rarely exceed ambient levels.

3. Plants grow best in soils with a high ion exchange capacity and these organisms mediate the release of nutrients, etc., from the soils into their own root systems.

4. The ion exchange capacity of the soil plus the native plants in equilibrium with it, constitute the major control of water quality in South Florida.

5. The areas which have maximum ion exchange capacities are found in peats, mucks and various mixtures of the two. Producers of the organic fraction that have this capacity are: sawgrass, cypress, prairies, mangroves, and blue-green algal mats associated with marl containing soils.

6. Any factor such as fire on dry ground, clearing, planting of exotics, drainage of low pH products, or construction which endangers this soil should be avoided at all costs.

Vegetative and Wildlife Character

Historically, the vegetative types within the study area were the freshwater grass communities typical of sawgrass swamps and wet prairies. Scattered tree islands and willow heads added to vegetative cover, providing viable habitats and protection to a variety of wading birds, mammals, amphibians and reptiles.

The study area has undergone extensive alteration and the existing vegetative communities reflect these changes. The exposure of marl soils through the oxidation of organic soils, and the occurrence of fire, has encouraged an

*Personal Communique, November 5, 1973.

invasion of exotic plant materials which outcompete native vegetation. Those dry, exposed marl soils not covered by exotic vegetation, especially abandoned agricultural fields, are rapidly covered by wax myrtle, willow, and Florida Trema. On those marl soils which remain seasonally inundated, spike rush, beak rush and maidencane exist with a mat of periphyton algae.

Based upon the viability and function of native plant communities, and the degree of exotic invasion, the study area may be discussed as two distinct vegetative sections: east of and west of the Florida Turnpike.

In the eastern section where soils have been severely destroyed by fire or drainage, exotics are dominant. Melaleuca quinquenervia, is found on exposed marl soils, with Brazilian pepper (Shinus terebinthfolius) dominating abandoned agricultural fields, remnants of sawgrass (Cladium jamaicense), spike rush (Eleocharis cellutosa), Beak Rush (Rhynchospora tracyi) and Maidencane (Panicum hemitomon) are also likely to exist with numerous varieties of invader grasses and weeds.

Presently this area serves as a marginal habitat for wildlife. Melaleuca forms sterile communities with an absence of understory. The fruit of Brazilian pepper supports numerous types of migratory and resident bird life such as robins, starlings, thrushes and mockingbirds. Little value can be assigned to the area for wading birds because of the lack of seasonal inundation.

West of the Turnpike, the area is populated by native and exotic vegetation, but the latter occurs mainly as scattered individuals and a few dense stands. Two impacted tree islands exist within the study area: one is 1½ miles south of the L-30/U. S. 27 junction, and the other in the south central portion of the study area.

Sparce to medium stands of sawgrass intermingle with beak rush, spike rush, maidencane, bladderworts, and panic grasses in those areas of deepest inundation.

Open ponded areas are likely habitats for herons, limpkins, king pails, bitterns, marsh hens, and boat-tailed grackles.* Numerous mammals can be expected to be seen within this area. Among those are opossum, short-tailed shrews, marsh rabbits, round-tailed muskrats (endangered), raccoon, river otters, bobcats and white-tailed deer.

Hydrology

Background: As indicated earlier, the study area was historically part of the Everglades drainage basin. As part of the basin it was subject to seasonal fluctuations of water level. Historically, water levels within

*Verbal and written communication with Dr. Al Shwartz, Miami-Dade Community College - North Campus, November 20th and 25th, 1973.

the study area at summer flood stood five to six feet higher than they do today. The eastern edge of the Everglades extended into the areas where the cities of Hialeah and West Miami are now located. In the Everglades, the broad, overland flow was generally southward past Miami, but, in many areas intermittent overflows occurred eastward by way of shallow sloughs through the coastal ridge into Biscayne Bay.

The study area exists as a natural depression in the Everglades Basin. The assumed altitude of the bedrock within the study area ranges between 0 and 2 feet above mean sea level. Originally the natural drainage system had been altered by the construction of the Tamiami Canal and the Miami Canal. These canals were constructed for the purposes of draining the Everglades to create agricultural lands as well as protect urban development to the east from possible flooding. Even today despite the existing flood control network, inundation of the study area occurs during summer months or after heavy rains.

Flood Control

The highest recorded ground water levels prior to inception of the Flood Control Project occurred in 1947. The water level over most of the area was 9 to 10 feet above mean sea level, approximately 3 to 5 feet above the present land surface. Following the extensive rainfall associated with Hurricane Donna in 1960, water levels in the area ranged from about 5 to 8 feet above mean sea level, inundating the area to an elevation 2 to 3 feet above the existing land surface. These lower water levels probably resulted from the increase in construction of secondary canal networks associated with urbanization to the east.

The provision of additional flood protection to this area would be quite costly and of questionable desirability. Although the levee system minimizes surface-water outflow from Conservation Area 3-B, underground seepage (ground water flow) and direct rainfall keep the land swampy or partly inundated during much of the year. The back-pumping of storm water from Area B into Conservation Area 3 has been proposed as a method to provide adequate drainage to Area B thus opening up this area for development. At the same time, it is proposed that back-pumping will increase water storage in Conservation Area 3. A network of canals dissecting the area would be necessary to facilitate movement of water to the pumping stations and a series of pumping stations would have to be constructed. Problems presently foreseen with back-pumping include considerations of water quality plus the possibility of salinity alterations in northern Biscayne Bay. Expanding urban development into Area B and the resulting loss of organic soils would most likely cause the further deterioration of both ground and surface water quality.

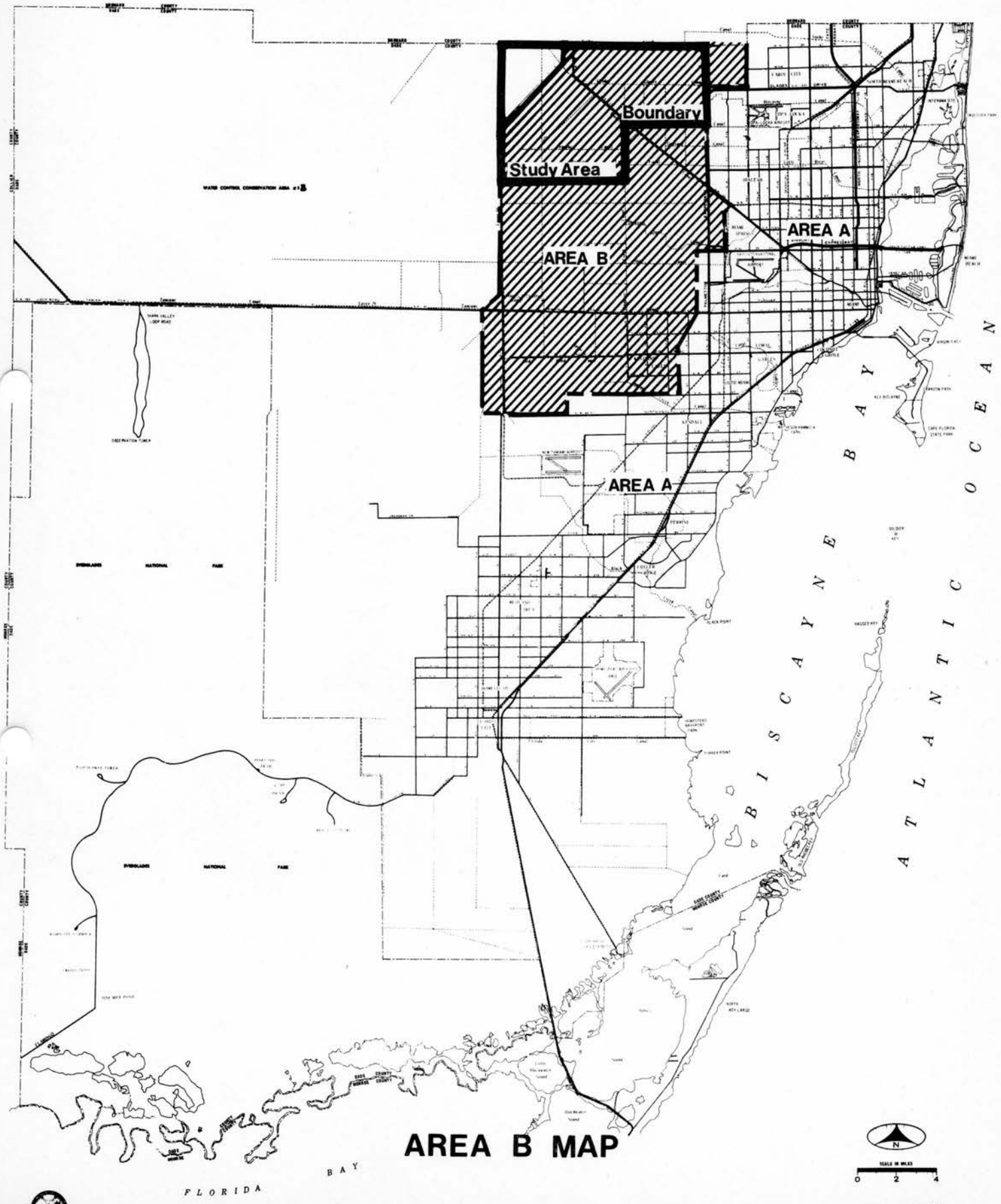
An alternative method of meeting flood criteria in Area B and thus allowing the development of that area would be to meet the existing flood criteria by means of fill. Flood criteria is presently approximately three feet above alnd elevations. With the removal of 2 to 3 feet of organic muck and peat, some 5 to 6 feet of fill material might be necessary to meet the flood criteria. The loss of the organic soils and resulting development would also cause the deterioration of water quality vital to the recharge of the Biscayne Aquifer and the conveyance canals feeding the Miami Springs and Hialeah well fields.

Water Supply

Hydrologically the study area is intricately connected with the Miami Springs and Hialeah well fields through both the conveyance canals (Miami Canal and its ancillary canals) and by the gound water movement within the Biscayne Aquifer. (See Figure 2-d) Two studies by the United States Geological Survey entitled Preliminary Evaluation of Infiltration from the Miami Canal to Well Fields in the Miami Springs-Hialeah Area, 1973 and The Hydrologic Effects of Area B Flood Control Plan on Urbanization of Dade County, Florida, 1968, indicate the importance of the Miami Canal to the water supply for Dade County and discuss the importance of Area B as it supplies water to the conveyance canals. The importance of the study area to the water supply system was discussed in the 1968 study The Hydrologic Effects of Area B Flood Control. In this study an evaluation of flow in the Miami River during a low water period indicates that Conservation Area 3-B contributes 33 percent of the total discharge of the Miami River, Area B which includes the study area provides 26 percent of the total discharge and Area A provides 41 percent. (See Figure 2-d). Even greater importance can be given to the study area when one realizes that much of the water within Area A during dry periods is ground-water movement from Water Conservation Area 3-B and Area B.

The efficient and safe management of the future water supply to the Miami Springs-Hialeah well fields will depend on the land use regulations imposed on Area B and the system of conveyance canals which supply water to the well fields.

The preliminary evaluation of infiltration from the Miami Canal to the Miami Springs and Hialeah well fields further emphasizes the value of the canal conveyance system passing through conservation Area 3 and Area B.



AREA B MAP

Metropolitan Dade County Planning Department

FIG. 2-D

Municipal pumpage from the Hialeah and Miami Springs well fields generally averages 100 million gallons daily (mgd). Pumpage fluctuates seasonally and is greatest between December and May. Peak day pumpage usually attains a maximum during April or May with daily pumpage approaching 120 million gallons.

Part of the water pumped from the Miami Springs and Hialeah well fields is obtained either from rainfall which has percolated into the aquifer or by infiltration from conveyance canals. The part obtained from rainfall is usually greatest during the wet season (June - November), and that obtained from canals is usually greatest during the dry season (December - May). Canal infiltration is especially important to the Miami Springs and Hialeah well fields because pumpage from the well field is at a maximum when percolation from rainfall are at a minimum.

The canal infiltration during 1970 was about 46.5 mgd, or 52 percent of the pumpage. The contribution for 1971 was computed to be 50.7 mgd, or 55 percent of the pumpage. During times of low water or drought canal infiltration may approach 80% of the total water pumped. The analysis indicates that canal infiltration is increasing in response to increased pumpage, at least on a yearly basis. However, the critical test occurs during droughts, when increasingly higher peak pumpages could exceed the canal's ability to supply adequate recharge to the aquifer to preclude inflow of inferior water from the tidal canals or to cause mining of the aquifer. An evaluation of the infiltration study further states that the maximum development of the Biscayne Aquifer in the vicinity of the well fields will depend chiefly on; adjustments in the location of canals (recharge boundaries), ability to maintain high heads in the canals, and possibly increased canal infiltration by deepening canals or removing botton sediment. However, deepening canals or removing of bottom sediment may be undesirable because of the absorptive and filter effects of the sediment on the quality of water that recharges the aquifer.

A final concern which must be addressed is that of maintaining land use controls adjacent to the conveyance canals. Major canalways such as the Miami Canal influence ground water movement as far back as one-half mile from their banks, depending on the depth of the canal, permeabilities of adjacent rock formations, and the seasonality or fluctuation of the water level. Hence, land uses which may impact water quality such as residential areas utilizing septic tanks, package

treatment plants with soakage or seepage pits, industrial discharges, or construction activities which could cause increased sedimentation, will all have a deleterious affect on water quality and should be avoided whenever possible.

Summary

The I-75/Regional Airport Planning Study area is somewhat unique in that it presently has a relatively broad range of land uses. The area is closely aligned to urban development on the east yet it encompasses some relatively unscathed natural areas within Conservation Area 3 to the west. Historically the vegetative types were freshwater grass communities typical of sawgrass swamps and wet prairies. Wildlife species were abundant. Although the area has been subjected to disturbances by the alteration of natural drainage patterns and the resulting invasion of either exotic vegetation adapted to dryer microclimatic conditions, it is still of significant ecological value to warrant environmental controls and regulations. Hydrologically the entire area west of the Palmetto expressway is a very important aquifer recharge area particularly as it relates to the Hialeah and Miami Springs well fields. The soils and vegetation within this region are important as they effect both the quality and quantity of water percolations into the aquifer. The entire site is one in which many environmental standards need to be adopted and enforced in order to insure that perspective development recognizes the environmental significance of the site as it relates to environmental quality in Dade County.

Land Use

The study area encompasses 37,120 acres or 58 square miles. (See Figure 2-e). At the present time 29,293 acres, 78.9 percent of the total study area, are still vacant and undeveloped. Agricultural use accounts for 3,304 acres, 8.9 percent of the study area. Pasture for dairy and beef cattle are the major agricultural activities. The only industrial activity in the study area is excavating limestone for aggregate and cement manufacturing. Land utilized by this industry amounts to 1,252 acres, 3.4 percent of the total.

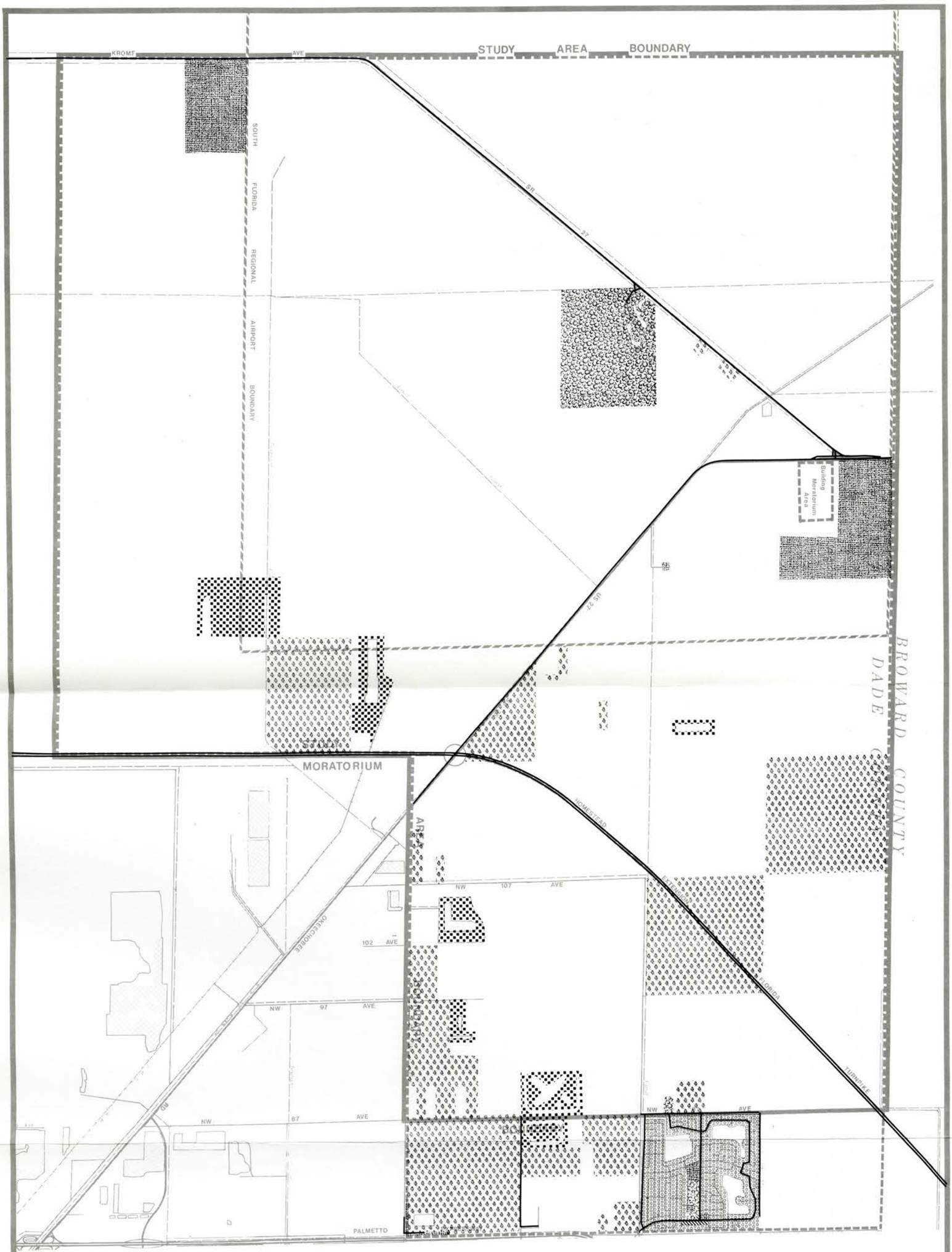
Lakes and canals (including easements) occupy 1,179.5 acres, 3.2 percent of the study area, including 160 acres of lakes within the Palm Springs North Subdivision. The Central and South Florida Flood Control District maintains easements on 80 acres of land flanking the canal system.

Single family homes are the predominant type of residential development. Only 632.0 acres, 1.7 percent, of the study area are utilized for residential development. The Palm Springs North subdivision is the major residential development within the study area. It occupies 450 acres of land, exclusive of lakes, roadways, commercial and institutional land uses, in Section 10, Township 52, Range 40. Townhouses account for 3.5 acres of the residential portion of the subdivision. The only other residential community within the study area is Jones' Fishing Camp, located on U. S. 27. This camp contains both motel and mobile home units and occupies 40 acres. The remainder of the residential development is single family and mobile homes scattered along the fringes of the study area.

Commercial facilities consisting of business in Palm Springs North and a truck-stop restaurant on U. S. 27 occupy 12 acres of land. A church and school occupying 24 acres of land in the Palm Springs North Subdivision make up the public and semi-public land uses. Land used for recreational purposes totals 49 acres. Thompson Park is the principal recreational facility. There are also a number of private stables located within the study area adjacent to scattered single family dwellings.

The remaining acreage of the study area is devoted to various uses. Transportation and utilities occupy 857.5 acres, 2.3 percent of the study area. These facilities include easements for future Florida Power and Light transmission lines, a microwave relay station, two radio towers, the Opa-Locka West Airport and a railway spur. A sewage treatment facility located in Palm Springs North occupies 9 acres. Finally, roadways including the Florida Turnpike Extension account for 517 acres or 1.4 percent of the developed land in the study area.

In summary, the breakdown of the existing land use in the study area is shown in Appendix H.



I-75 / REGIONAL AIRPORT AREA PLANNING STUDY

EXISTING LAND USE

THOUSANDS OF FEET

- AGRICULTURAL
- PARKS and RECREATION
- RESIDENTIAL
- PUBLIC SEMI-PUBLIC
- COMMERCIAL
- INDUSTRIAL

Figure 2-e

Zoning

Existing zoning classifications for the study area are shown in Figure 2-f. More than 94 percent of the area is zoned GU, Interim District and AU, Agricultural District. The general and agriculture zoning permits single family residences on five acre lots.

Section 22, Township 52, Range 40 is a one square mile extension of Miami Lakes located immediately adjacent to the Palmetto Expressway. It is zoned for a number of mixed uses including IU-C (Industrial District, Conditional); BU-2 (Special Business District); RU-4 (Apartment House District at 50 units per net acre, maximum); RU-4L (Limited Apartment House District at 23 units per net acre maximum); RU-4M (Modified Apartment House District at 35.9 units per net acre, maximum); RU-TH (Townhouse District with a maximum of 8.5 units per net acre) and RU-1 (Single Family Residential District with a maximum of 3.5 units per net acre or 5.75 if clustered).

Most of Palm Springs North (Section 10, Township 52, Range 40) is zoned and has been developed as an RU-1 district. This subdivision lies immediately northwest of the Palmetto Expressway and also contains BU-1A (Limited Business District), BU-1 and RU-TH zones.

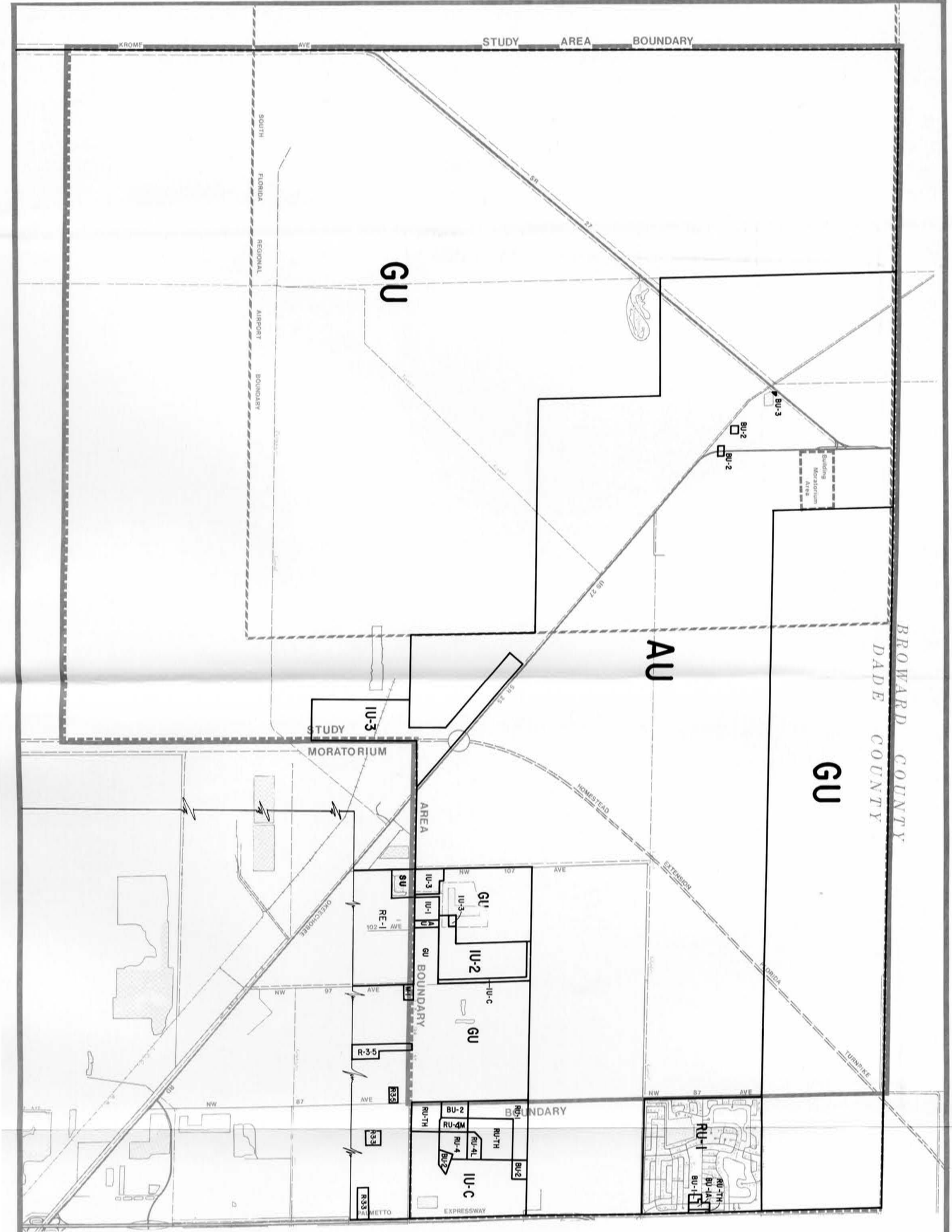
Various commercial and industrial classifications dot the remainder of the study area. These zones include BU-3 (Liberal Business District) and BU-2 as well as IU-3 (Industrial, Unlimited Manufacturing District), IU-C (Industrial District, Conditional), IU-2 (Industrial Heavy Manufacturing District), and IU-1 (Industrial Light Manufacturing District). Most of the parcels zoned for industrial uses are currently being mined for limestone rock for aggregate and cement.

In summary, the breakdown of the existing zoning in the study area is shown in Appendix E.

Ownership Patterns

The majority of the land in the study area depicted in Figure 2-g is in large parcels and is owned by a relatively small number of interests. There is a one square mile section of the study area (Palm Springs North) which has been almost completely developed into approximately 1,620 single family homes and townhouses. Within Palm Springs North approximately 97 percent of the housing units were resident-owned in 1970. Appendix F shows the number of acres owned and the number of property owners within the study area.

As can be seen from Appendix F out of the 37,120 acres in the study area, approximately 20,476 acres or 55.2 percent of the land in the study area is owned by only 11 different interests. Each of these land



I-75 / REGIONAL AIRPORT AREA PLANNING STUDY EXISTING ZONING

THOUSANDS OF FEET

RU-1 : Single Family Residential
RU-TH : Townhouse 8.5 units/acre
RU-3M : Minimum Apartment House 12.9 units/acre
RU-4L : Limited Apartment House 23 units/acre
RU-4 : Apartments 50 units/acre
BU-1 : Business Neighborhood
BU-1A : Business Limited permits variety including oil stations
BU-2 : Business Special permits variety including liquor store
BU-3 : Business Liberal wholesale including mech. garage and used car lots

IU-2 : Industry Heavy
IU-3 : Industry Unlimited
IU-C : Industry Controlled
AU : Agricultural
GU : Interim depends on character of neighborhood

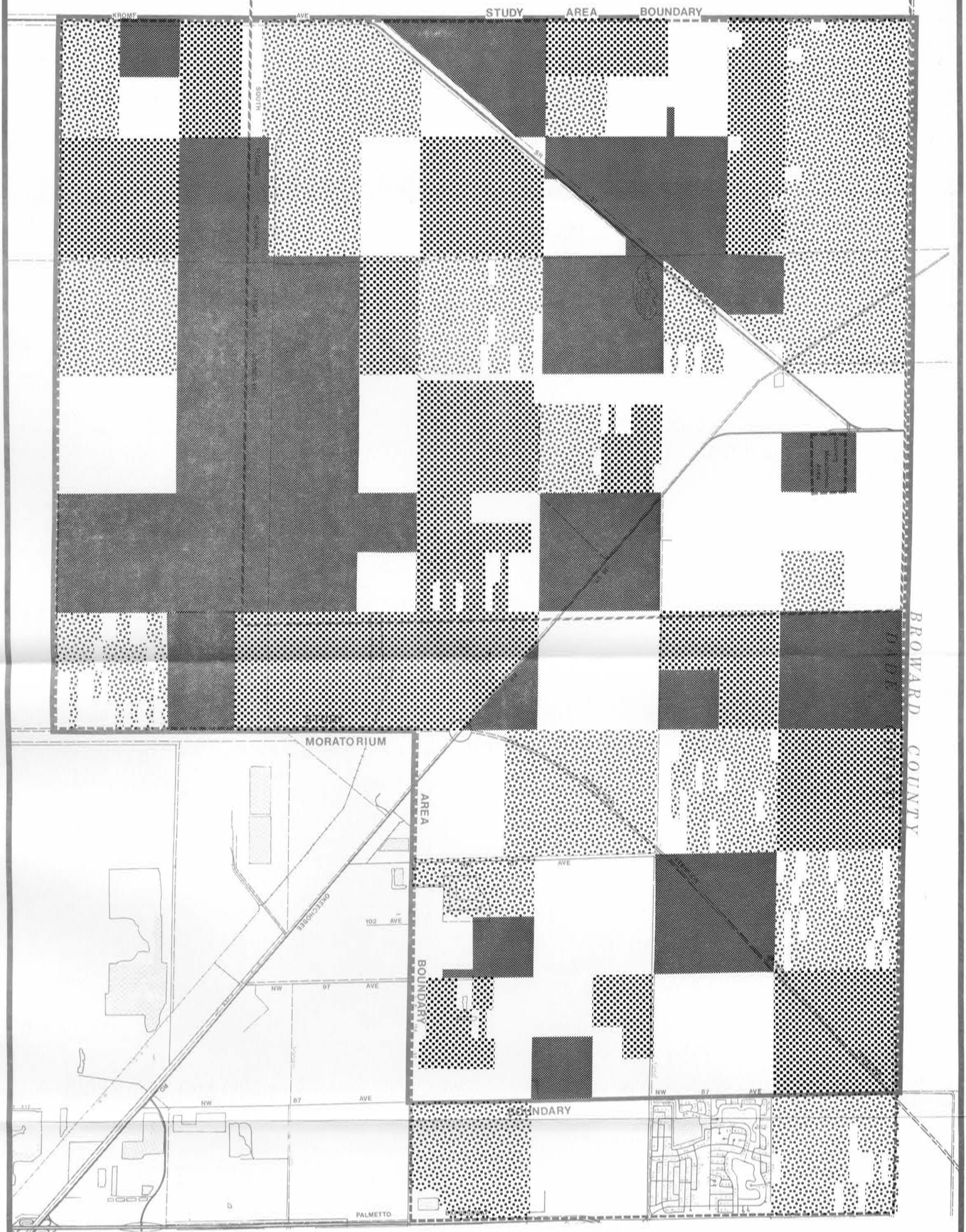
HIALEAH

GU : Interim depends on character of neighborhood
R-3-3 : Multiple Family
R-3-5 : Multiple Family
M-1 : Industrial Light

HIALEAH GARDENS

RE-1 : Ranch Estate single family
R-1 : Single Family
SU : Commercial special uses

Figure 2-1



I-75 / REGIONAL AIRPORT AREA PLANNING STUDY

OWNERSHIP PATTERNS

✱ PATTERNS INDICATE OWNERSHIP OF 160 CONTIGUOUS ACRES OR MORE.

THOUSANDS OF FEET

Figure 2-9

owners holds 640 acres of land (one square mile) or more. The largest owner in the study area holds over 4,345 acres which amounts to 11.7 percent of the total land in the study area. These parcels of land cover portions of 10 contiguous square mile sections in the southern part of the study area.

Another large land owner has more than 3,845 acres or 10.4 percent of the total area. This holding covers large areas of nine contiguous square mile sections in the central part of the study area. Another group owns 6.9 percent of the land. Over 2,000 acres of this holding is located in four square mile sections in the northwestern portion of the study area, while the remaining parcels are scattered.

The fourth largest owner of land is the Central and South Florida Flood Control District (CSFFCD) which owns approximately 1,990 acres or 5.4 percent of the total land. The majority of this land is in large parcels in the northwestern sector. The rest is in small parcels and narrow easements scattered throughout the study area.

Another ten individuals own between 320 and 639 acres for a total of 11.7 percent of the land area. An additional 26 others each own parcels totalling between 100 and 319 acres. The 47 largest land owners combined own approximately 80 percent of the total land in the study area.

In addition to the CSFFCD, several other public and semi-public concerns have substantial holdings in the area. The largest of these is a 320 acre parcel owned by American Telephone and Telegraph Company in section 31-52-39. The Florida Power and Light Company owns about 277 acres in seven different sections in parcels less than 50 acres each. About 48 acres of land is owned by Dade County and is located in several sections. Approximately 47 acres of land have been set aside for Dade County Canals.

Transportation Facilities

Three classifications of transportation facilities are discussed in this report: Existing facilities and programmed improvements in this section, and recommended facilities in Part 5.

Existing Facilities

The study area persently contains few improved roads. The existing roads in the area have been built either by private land owners (to provide access for industrial or agricultural operations) or as part of a statewide or national road system (S.R. 27 and U. S. 27). The Dade County Public Works Department, which has the responsibility to provide section and half-section line roads, has wisely not extended many arterials into the study area because to do so would be premature at this time. As mentioned previously, developement in the area is still sparse, except for the Palm Springs North development near the eastern boundary, and consists mainly

of industrial operations (extraction activities and cement plants) which provide their own access roads.

The County does not yet own the right-of-way necessary for the extension of roads into the study area. This transfer of land normally occurs during the subdivision process as land presently in agricultural, industrial, or general use classifications is converted into residential or commercial land.

The main arterials presently contained in the study area are U. S. 27 (Okeechobee Road) and S.R. 27 (the northern extension of Krome Avenue). U. S. 27 is an important link for the movement of goods by truck between southeast Florida and Central Florida. The present facility contains only two traffic lanes in the area from the Palmetto Expressway north through the study area and past the Dade County line to the town of South Bay on Lake Okeechobee. Heavy truck traffic resulting from the intrastate movement of goods and the many cement plants in the vicinity of the study area has made U.S. 27 a dangerously congested transportation facility. The other main arterial in the study area, S. R. 27, provides a north-south link for traffic in the western section of Dade County. This road is used primarily by travelers going on recreational or other types of personal trips. Since fewer trucks use S. R. 27 than U.S. 27, the former is a less congested road.

The study area also contains a portion of the Homestead Extension of Florida's Turnpike (H.E.F.T.). The Turnpike Extension is a four lane toll expressway which connects the present Florida Turnpike at the Dade-Broward line with the Homestead area in South Dade. The Turnpike Extension, except for a 2.5 mile link between Florida City and Homestead, is completed and open for traffic. The last 2.5 mile section is scheduled to be open for traffic by the end of 1974. The Turnpike Extension has only one interchange with an arterial in the study area. This interchange is located at U. S. 27 (Okeechobee Road) and can handle movements in all directions.

Other improved roads (paved and with traffic signs) in the study area include N. W. 186th Street between 78th and 87th Avenues, N.W. 178th Street between 79th and 87th Avenues, N.W. 170th Street between 77th and 87th Avenues, and N. W. 155th Street between 77th and 87th Avenues. (See Figure 2-e, the existing land use map, which includes existing roads in the study area).

Programmed Improvements

Various transportation facilities are either scheduled to be built or upgraded in the study area by 1985. These projects range from the construction of Interstate 75 to the extension of section line roads by

the Public Works Department. Each major program improvement is discussed separately in this section.

Interstate 75, ultimately extending from northern Michigan to Miami, is potentially the most significant transportation improvement planned for the study area since this highway can be expected to create strong pressures for urbanization.

Within Florida, I-75 is presently open from the Georgia State Line to Tampa-St. Petersburg. From St. Petersburg, I-75 is now planned to be constructed south along the Gulf Coast to Naples, east along Alligator Alley to Andytown in Broward County and then south into Dade County ending at the Opa-Locka Expressway (N.W. 138th Street). The proposed alignment for I-75 in the study area is shown on the recommended land use map. (See Figure 2-i). The Interstate will enter Dade County along the N. W. 92nd Avenue alignment. It will proceed south to Grahams Dairy Road (N.W. 138th Street), where the Interstate will turn to the east and continue along N.W. 138th Street to the Palmetto Expressway and a direct tie-in to the Opa-Locka Expressway. I-75 is scheduled to be completed by 1980.

Within the study area access to Interstate 75 will be provided by the following interchanges: Homestead Extension of Florida's Turnpike, N.W. 186th Street (Miami Gardens Drive), Opa-locka Expressway at N.W. 92nd Avenue, and the Palmetto Expressway at N.W. 138th Street. Grade separations (overpasses or underpasses) will be provided at the following locations: Honey Hill Road (N.W. 202nd Street), N.W. 170th Street, N.W. 155th Street, and N.W. 87th Avenue.

On the north-south section between S.R. 84 in Broward County and Florida's Turnpike Extension, Interstate 75 will have eight traffic lanes - four 12 foot lanes in each direction. A 166 foot wide median will be included to meet minimum side clearance requirements and to accomodate a 102 foot future transit corridor. This transit corridor has been provided in order to establish a flexible multi-modal transportation corridor for I-75 adaptable to future surface transportation corridors to be reserved in the Dade-Broward urban area. The 102 foot transit corridor width could accomodate virtually any type of transit-bus or rail line with adequate width available for the inclusion of elevated stations, platforms, and pedestrian access ramps. In this segment of the facility, frontage roads would be provided where needed to maintain local road continuity. Between S.R. 84 and Florida's Turnpike Extension a 470 foot right-of-way corridor is proposed for I-75. In addition to the vehicular roadways and the transit corridor, this width allows for the inclusion of frontage roads and selective landscaping.

South of Florida's Turnpike Extension, the Interstate would be reduced to six traffic lanes - three 12 foot lanes in each direction. The median width of 166 feet and the total right-of-way of 470 feet would be maintained all the way to the Palmetto Expressway. Inside the Turnpike Extension, frontage roads would be provided in locations where local road continuity would have to be maintained, such as along N.W. 138th Street.

Existing traffic volumes and analysis of levels of service indicate that U.S. 27 is operating at a condition approaching unstable flow with tolerable delay from the Palmetto Expressway to N.W. 119th Street. From 119th Street north to the Broward County line, U.S. 27 is operating at a relatively free flow condition. This improvement in the traffic service is due to the ending of congestion caused by trucks entering and leaving the highway to serve the nearby concrete plants. However, heavy truck traffic is always found on U.S. 27, since the route is a free alternate to the Florida Turnpike.

U.S. 27 is programmed to be improved by the Florida Department of Transportation from Lake Okeechobee south to the Palmetto Expressway. The section from the Palmetto Expressway to the Homestead Extension of Florida's Turnpike will be six lanes wide while the section from the HEFT north will be four lanes wide. At present the road is planned as a rural facility - with no access control provisions. However, efforts are currently underway to have the State D. O. T. acquire the right-of-way necessary for the construction of a frontage road on the north side of U.S. 27. This frontage road is needed in order to have U.S. 27 provide high speed and safe travel without the interference caused by development next to the roadside. Ribbon development, if allowed, would also be more costly to service because the development is linear thus requiring an extension of sewers and other utilities just to serve a narrow area.

The Palmetto Expressway (S.R. 826) forms the southeast boundary of the study area. Presently, the expressway is being widened from the existing four lanes of traffic to six lanes. The section south of the Big Bend in the expressway to the East-West Expressway is currently under construction while the section from the Bend east to the Golden Glades Interchange is currently in the preliminary engineering phase. (In order to accommodate both the traffic functions and construction activity on the Palmetto Expressway several sections of the roadway have been temporarily realigned. Once the construction is completed by the end of 1974, however, traffic will be rerouted back to the original roadway alignment). Two of the interchanges in the vicinity of the study area, N.W. 138th and N.W. 155th Streets, are being reconstructed as part of the current work schedule. The N.W. 138th interchange is being redesigned in order to tie-in to the future I-75 and Opalocka Expressway alignments.

The only arterial in the study area scheduled to be improved in the next five years is N.W. 186th Street (Miami Gardens Drive). This facility is scheduled to be widened to a four lane divided road in the fiscal year 1974-75. At the same time, a bridge at N.W. 77th Avenue and N.W. 186th Street is scheduled to be built. The construction will include a four lane roadway with sidewalks, street lighting, curbs and gutters, a positive drainage system, landscaping and signalization.

Utilities

Water and Sewage Facilities

Existing water and sewage facilities are primarily located in Palm Springs North. These are owned and operated by Miami Utilities, Incorporated, a private utility company serving this residential community. Presently, the study area has no existing water or sewage facilities capable of expansion to provide those services necessary for development.

Water Distribution System

At the present time a water distribution system sufficient to serve the entire study area does not exist. A portion of the study area, Palm Springs North, is served indirectly from the Miami-Dade Water and Sewer Authority. The water distribution system is supplied by a 16 inch water transmission main from the City of Hialeah which is metered at N.W. 138th Street and N.W. 77th Avenue. However, the water lines presently available in this area are of insufficient size to be of any benefit to the 58 square mile area. Therefore, a considerable extension of the Miami-Dade Water and Sewer Authority's water distribution network would be required to serve significant development of this area, should the need arise.

Sewer Service

The availability of sewer service within the study area is minimal. Palm Springs North is provided sewage disposal through a 750,000 gpd tertiary (95% Biochemical Oxygen Demand and Suspended Solids removed) sewage treatment plant located within the development. This is the only sewage collection and treatment facility within the area. Due to the limited capacity of the plant, which cannot accept connections from outside its own boundaries, sewage disposal service to the remainder of the subject area is not possible at this time.

Proposed Water and Sewer Service

The Miami-Dade Water and Sewer Authority has no present plans in

its programmed time-table to provide service in the future beyond N.W. 97th Avenue. A 20 inch water main is programmed to run along the northern border of Palm Springs North to N.W. 87th Avenue by 1975. Palm Springs North will receive sewage service by a 30 inch main by 1977 according to the Dade County Water Quality Management Plan of 1973. This main will run from N.W. 138th Street along N.W. 77th Avenue. However, potential delays in funding would make 1980 a more realistic date.

Until the 30 inch main is completed, future development east of the Turnpike Extension will be faced with the alternative of using interim sewage treatment facilities. However, according to policy guidelines in the Water Quality Management Plan (Policy #2, page 281), interim waste-water treatment plants can only be sited within two miles of the proposed location of a future regional interceptor (scheduled to be constructed within five years of the start of interim plant operation). In this case the proposed location of the interceptor runs along N.W. 77th Avenue. This limits the use of interim package treatment plants to the area east of N.W. 97th Avenue. Pollution Control, the Planning Department and the Water and Sewer Authority all agree that a plant size of 0.5 mgd would be a desirable minimum in an effort to limit the problems associated with the proliferation of small plants until the regional waste-water system is completed. From a pollution control point of view, small plants create multiple pollution sources. These plants do not require 24-hour operators. Therefore, if a plant breaks down and there is no operator available, untreated or poorly treated waste could possibly be discharged to ground water or to surface water. Multiple dispersed small plants also create maximum enforcement problems. From a planning standpoint, it is easier to direct growth with a plant size of 0.5 mgd or greater. The placement of a larger plant serves as an implementation tool for directing urban growth.

In addition to the policy guidelines in the Water Quality Management Plan mentioned above, the Environmental Protection Guidelines (p.2-40) state that no septic tanks or package treatment plants should be allowed west of the Turnpike Extension, especially if they discharge into surface or groundwater. It is therefore probable that no water or sewer service will be available within the study area west of the Turnpike, even if the Water Quality Management Plan is funded at its proposed rate.

Education

Existing Facilities

The I-75/Regional Airport Study area is sparcely populated, therefore the educational facilities within its borders are limited. The only existing public educational facility within the entire study area is

Palm Springs North Elementary School, located on a 27.8 acre school-park site at 17615 N.W. 82nd Avenue in Section 10-52-40. Of the 1,150 students currently attending this institution, 1,030 are in grades 1 through 6 and 120 are in kindergarten. The plant capacity of the school was designed to accommodate 945 of the 1,030 pupils in grades 1 through 6. With the addition of five portable units, the total plant capacity can now accommodate 1,095 of the 1,150 students including the 120 kindergarten students, since the portables are capable of handling 30 pupils each. Thus the school is currently overcrowded by some 55 students.

Proposed Facilities

The Country Club of Miami Developemnt Plan* calls for 92.7 school-park acres for the total project, which includes five sections of land in Dade County and two adjoining half sections in Broward County. Reserved locations for Dade County public school sites are in Section 3, Township 52 South, Range 40 East within the study area and Sections 1, 11, and 12 of Township 52 South, Range 40 East, just east of the study area.

Construction of a Junior High School on a 30 acre school-park site, located east of the study area in Miami Lakes (Section 13-52-40) at approximately N.W. 67th Avenue and Miami Lakeway Drive, is high on the school system's priority of construction. This land will also accommodate an elementary school.

Parks and Recreation

Parks and Recreation Department facilities which currently exist within the boundaries of the study area include:

1. Palm Springs North Park (4.0 acres)-N.W. 176th Street and 79th Avenue (park/school complex).

2. Milton E. Thompson Park - approximately 600 acres with about 34 acres developed for camping - Section 16-52-39.

3. Two boat launching areas on Krome Avenue (S.W. 177th Avenue)- 1.4 and 1.5 acres (immediately west of the study area).

*Country Club of Miami Development Plan, Wilbur Smith and Associates, March, 1972.

Using available information (primarily 1970 Census data) the following park and recreation acreage deficits are found in the study area: 5.7 additional acres are necessary for neighborhood parks and 11.2 are needed for community parks. Adopted County standards recommend 1.25 acres of neighborhood park lands per 1,000 population, generally in minimum tracts of 5 acres; while also recommending 1.50 acres of community-type park lands per 1,000 population, generally in minimum tracts of 20 acres. It can, therefore be seen that a priority need for additional park lands of these types does not exist today. Of course, as population and demand may increase, these types of park sites should be provided for the residents by purchase and/or dedication.

For reasons stated, much of the study area does not offer recreational programs provided by county neighborhood and community park sites. However, from a resource-oriented standpoint, the Dade County Parks and Recreation Department administers Thompson Park under a long term lease arrangement with approximately 34 acres now developed and operating as a campground. Although the park site is virtually all of Section 16-52-39, the SE¼ of the SE¼ is reserved by the State Board of Education. The Dade County Parks and Recreation Department has no active plans, at this time to acquire additional resource-based park sites within the study area. They do recommend, however, that if Thompson Park is indeed found to be incompatible with future airport operations, that its area and facilities be relocated to the mutual satisfaction of the State Board of Education and Dade County.

Police Protection

At present the study area north of the N.W. 106th Street extension falls within the boundaries of the North District of the Public Safety Department. (That portion of the study area south of N.W. 106th Street is served by the Airport District). The North District is staffed by 176 persons, of which 165 are police officers. These officers provide service for approximately 225,000 permanent residents 24 hours a day. On this basis there are 1.4 police officers per 1,000 residents which is well below the recommended national average of three police officers per 1,000 residents. Considering the uncertain factor of seasonal increases, as well as anticipated population growth, it can be readily ascertained that the existing public safety facilities could not provide adequate service for future residents of the study area. It should also be noted that according to Dade County Public Safety Department estimates, the area north of the Palmetto Bypass and west of Red Road (N.W. 57th Avenue) is projected to house an additional 80,000 residents over the next ten years which will create an even greater strain on efforts to provide police service in the northern portion of the county. The Public Safety Department has plans for the North District to be subdivided into two separate districts during 1974. However, no provisions were included in this proposal to absorb the impact on service created by the regional airport since the future of this facility is still uncertain.

Fire Protection

Current Fire Stations

At present, there are no fire stations in the study area. The four closest stations are: Station 1 - 16770 N.W. 37th Avenue (pumper); Station 7 - 2601 N.W. 103rd Street (pumper); Station 17 - 7050 N.W. 36th Street (pumper and aerial); and Station 26 - 2495 Ali Baba Avenue (pumper).

The maximum desired response time for a first arriving unit is six minutes and for a second arriving unit twelve minutes. If an aerial unit is required, six minutes is the maximum time desired.

The response times to the study area with the existing facilities are much longer than the above desired times. The shortest first response time is 8.5 minutes from Station 1 with other response times ranging from 10 minutes to as high as 25.3 minutes. The shortest response time for aerial equipment (Station 17) is 14.6 minutes with other response times reaching 26.4 minutes.

Proposed Fire Stations

Three of the four stations mentioned above are currently budgeted for relocation. Station 1 will be located at N.W. 67th Avenue and 167th Street and will improve the response times by approximately four minutes. The other two relocations (Station 11 - N.W. 175th Street and 22nd Avenue and Station 26 - N.W. 42nd Avenue and 145th Street) will not significantly improve the response times.

Four new stations, to be completed between 1980 and 1990, are included in the long range development of the general area. Two of these will be located in the study area and will provide adequate first arrival time for a limited portion of the area. The other two stations will be located to the south and will not provide adequate first arrival time.

With the proposed new stations and the relocation of current stations, the eastern portion of the study area will have adequate response times. Although most of the area will still have inadequate service, the response time is not considered critical since most of the study area is sparsely populated.

Housing Inventory

According to information extrapolated from 1970 census data, there were approximately 1,560 dwellings units within the study area in 1970. By utilizing recent aerial photos (1973) and on site field inspections, the total number of dwelling units is now estimated at about 1,710.

The 58 square mile study area contains only two major concentrations of housing: the Palm Springs North development abutting against the eastern boundary and Jones's Fishing Camp situated near the intersection of U.S. 27 and S. R. 27. Palm Springs North (1,620 units) and Jones' Fishing Camp (65 units) together account for 98 percent of the housing total but less than 2 percent of the land area. Consequently, it is apparent that extensive construction is atypical of the area under study; large vacant tracts predominate.

Other housing clusters (each 10 units or less) are located as follows: immediately east of U.S. 27 along a short section of N.W. 154th Street; lining N.W. 87th Avenue, north of the 138th Street intersection; and at the intersection of N.W. 170th Street and 87th Avenue.

Moderate-value housing units dominate the study area with most of this type housing located in the Palm Springs North Subdivision. Lots in this subdivision vary in size ranging from approximately 7,500 square feet to approximately 10,000 square feet. Housing units within the N.W. 154th Street cluster, though similar in construction and value to those units built within Palm Springs North, occupy more spacious grounds.

There is a concentration of 55 low-cost mobile homes located at Jones' Fishing Camp. They are highly diversified as to size and value and encircle a six acre water body. North of N.W. 138th Street, a half-mile section of 87th Avenue is lined by stables and pastureland. With the exception of one permanent CBS structure, mobile homes appear to be the preferred form of dwelling along this segment of the roadway. More expensive housing is limited at present to two multi-acre estates bordering N.W. 87th Avenue between 170th and 174th Streets. A few solitary dwellings (mostly mobile homes situated on agricultural holdings) are scattered at indifinite intervals along existing roadways throughout the remainder of the study area.

Multifamily structures are restricted to two sites: Twenty-nine town-house units east of N.W. 78th Avenue in Palm Springs North and ten units fronting S. R. 27 at Jones' Fishing Camp.

The absence of extensive development in the study area is the principal cause of the low gross residential density (approximately one housing unit for every 22 acres). The more heavily populated fringe area east of N.W. 87th Avenue (Palm Srpings North) has approximately 4.4 units per net residential acre. Maximum net density (roughly 10 units per residential acre) is attained within the mobile home park. The townhouse cluster east of N.W. 78th Avenue has an average net density of about 9 units per acre.

In 1970 the home values in the Palm Springs North development ranged from a low of $15,200 to a high of $25,200. This information, recorded in the 1970 Census of Housing, is unavailable for the remainder of the study area.

The market value of the houses in the Palm Springs North development today range from a low of approximately $27,000 to over $38,000. Another indicator of the value of these houses is the assessed value. A sample of 54 houses taken from the tax records indicated an average value of approximately $20,000. This assessed value is about 60 percent of the actual market value.

Population

By using the estimated number of dwelling units (1,710) and the ratio of persons per dwelling unit (3.7), the Dade County Planning Department estimated the current population for the study area to be approximately 6,327. The majority of these residents, approximately 5,994, are located in the Palm Springs North development.

The Planning Department has predicted that the population of the County by 1985 will be somewhere between 1,660,000 and 1,820,000. The present population is estimated at around 1,400,000, so an increase in population of between 260,000 and 420,000 is expected by 1985.

There are a number of areas in the county where development is in various stages of planning. If all of these developments were to be completed they would be capable of housing much more than the increase in population projected for 1985. It is unlikely, therefore, that all of these developments will materialize by 1985. There is no way to realistically predict exactly which of these developments will actually take place, or at what rate they may proceed.

The City of Miramar borders Dade County on the north and extends as far west as U. S. 27. The Miramar Comprehensive Master Plan* recommends extensive development of the entire city with a projected population of 250,000 by 2035. While excessive development of this nature may be feasible from an engineering point of view, its compatability with the environmentally sensitive area it is recommended to occupy is certainly open to question. In addition, this type of growth would most likely "spill over" into Dade County. (The Broward County Area Planning Board's new master plan designates this portion of southwest Broward County as open space).

The portion of the study area east of the proposed I-75 corridor will be suitable for residential development as public services become available. There is already some development in the area, i.e. Palm Springs North and some developments bordering the area, i.e. the Country Club of Miami and Miami Lakes. It is recommended that the areas adjacent to these existing settlements be developed next as services become available.

*Miramar Comprehensive Master Plan, Post, Buckley, Schuh & Jernigan, Inc. and Grave/Haack & Associates, for City of Miramar, Florida, December, 1972.

The Country Club of Miami already has development plans for a portion of northern Dade County and southern Broward County. Part of this is in the study area and lies directly north of Palm Springs North subdivision. If this section is developed according to the present plan, there will be between 3,000 and 3,600 dwelling units, made up of a variety of housing types. An area directly north of this in Broward County will have around 3,900 units of townhouses and garden apartments.

Miami Lakes (Section 22-52-40) contains a number of residential zoning districts based on an approved site plan. If this area is developed to its maximum permitted density, there would be approximately 4,600 dwelling units there. Other areas in the eastern portion of the study area have already been preliminary platted, so development here seems likely in the near future.

Based on past trends it is probable that the above developments will be completed by 1985 and that as these areas grow surrounding areas will also be developed. This growth could bring around 20,000 additional people to the area by 1985 making the total population of the study area over 26,000.

A limited amount of socio-economic information can be obtained for the study area from 1970 census data. The information available is for the Palm Springs North development which comprises the majority of the population of the study area (approximately 95 percent today). This development had a population of 4,550 in 1970. Of this, 43.4 percent or 1,975 persons were under 18 years of age and 2.6 percent or 118 persons were 62 years of age or older. The percent of persons under 18 is considerably higher than the Dade County average of 31 percent whereas the percent of persons over 62 is lower than the Dade County average of 16 percent. The high percentage of children in the study area indicates that the composition of the existing neighborhoods are more family oriented than the remainder of Dade County as a whole, where there are large numbers of single and retired persons.

The number of families with females as the head of the household is an indicator of family stability. While 12.5 percent of the households in Dade County have female heads, block statistics for the Palm Springs North area indicate only 5.9 percent of the households have females as heads.

Homes located in the Palm Springs North development had an average median value of $20,206 based on 1970 census data. By comparing median income to median home value for census tracts which have homes of approximately the same value, it was found that home values averaged approximately twice the median family income. By applying this technique

to Palm Springs North home values, median family income was estimated to be approximately $10,103 for 1970. This is compared to the average median family income for Dade County which was $9,245 in 1970. Although this information is available only for Palm Springs North, it should be noted that this development comprises the majority of the population of the study area (roughly 95 percent), therefore dominating the socio-economic characteristics of the study area.

PART III

RECOMMENDED METROPOLITAN DEVELOPMENT POLICIES FOR METROPOLITAN DADE COUNTY

The following policies highlighted below have been utilized as guidelines for determining the recommended land use patterns for the study area as shown in the Development Guide. They were extracted from the Recommended Metropolitan Development Policies which were approved by the Planning Advisory Board at its meeting held on May 26, 1974. This is an effort to guarantee that the I-75/Regional Airport Area Planning Study is compatible with the new County-wide land use plan and development policies. The following policies have been found to be particularly applicable to this sub-area study by the Planning Department staff:

1. Utilize all planning, legislative and implementation tools necessary to achieve a desirable balance between population growth and distribution and the environment.

2. Encourage the location of development and redevelopment in areas where the suitability of land for development is greatest based on soil conditions, water table level, vegetation type, minimum flood hazard, and desirable location. Also, develop restrictions and prohibitions against development and redevelopment in particularly sensitive and unique natural areas.

3. Continue to study and evaluate the need for a regional jetport to insure that its public benefits will outweight its total social costs; make its construction contigent upon the clear overloading of facilities at Miami International Airport, and insure that it will in no way jeopardise the water quality and quantity of the Biscayne Aquifer, the water conservation areas, and the Everglades National Park.

4. Adopt and enforce land use development regulations in areas near major generators of noise, such as airports, to insure that residential development does not conflict with noise emitting activities.

5. Adopt and enforce more strict design standards to insure that any development within determined noise impact areas are properly insulated.

6. Allow development or redevelopment in new areas or in already populated areas only at such time as all development standards and

requirements, including the provision for services, are accomplished.

7. Provide public services only to areas already developed or contiguous thereto, unless environmentally undesirable.

8. Limit urban expansion to those areas most suitable for new development or redevelopment on the basis of accessibility, cost of energy, extension of services, terrain, and criteria directed toward preserving vital aspects of the county's natural and man-made environment.

9. The timing, location and construction of major public investments (schools, jetport, civic buildings, etc.) should be made only after through evaluation of their impact on and interdependency with residential patterns, other employment locations and related facilities.

10. Monitor, forecast and influence the location of major commercial and industrial complexes; encourage grouping of industrial and commercial firms at points of high accessibility in order to insure economic and efficient movement of people and goods.

11. Encourage and protect agriculture as a viable economic use of Dade County's land.

12. Encourage the development of linear parks in suitable utility line easements as greenways.

13. The distribution of density should be determined in part by the natural carrying capacity of the land.

14. Conserve and protect existing sound residential areas.

15. New communities should be used as a tool for shaping urban growth.

16. "Specialized activity centers" should be encouraged when such centers result in economies of scale, advantages of specialization, ease of communication, lower consumption of energy, lower relative inventories, and richness of opportunities.

17. Stimulate the development of the activity centers concept by providing convenient means of transportation to and from the centers.

18. Transit facilities and services should support the shaping and staging of development, redevelopment, and intensification of the central business districts, tourists areas, diversified and specialized activity centers, and their contiguous residential areas.

19. Transportation planning and investment should provide for the efficient movement of goods including consideration of truck routes; intermodal terminals; use of modern distribution systems; incorporation of goods movement systems into design of major activities centers; elimination of conflicts between people movements and goods movements, and the conservation of energy.

20. Transportation facilities should be designed to complement adjacent development and also have a distinctively aesthetic identity of their own.

21. Deisgnate and preserve through advance acquisition of rights-of-way where necessary, transportation corridors as a means of achieving orderly relationships between transportation and urban development.

22. Transportation planning should be coordinated with the development or redevelopment of adjacent land, particularly in the vicinity of mass transit stations and expressway interchanges.

23. Where appropriate, adequate buffers should be provided by government to protect adjacent residential development from the adverse effects of noise pollution.

24. Development and redevelopment in approach zones to airport runways should be regulated to effectively reduce the detrimental effects of noise pollution.

25. Activities with significant demand for air travel should be encouraged to locate in proximity to airports.

26. Adopt a Dade County "Environmental Impact Ordinance" requiring all significant developments and redevelopments to submit an environmental impact statement with each development proposal to assess the impact of the development on the natural environment, calculate the public costs of all development, determine the costs of all development, and determine the costs of maintaining the required public facilities.

27. Provide planners and others responsible for reviewing development projects with a set of objective criteria in the form of a "Development Manual" containing minimum standards for the provision of services, which can be used to evaluate residential, commercial or other developments and redevelopments in terms of the appropriateness of the project for the area proposed and the quality of life that would be provided for future residents.

28. Provide local government with the means of acquiring land in advance of development for the purpose of controlling the timing, location, type and scale of development or redevelopment.

29. Establish creative taxation as a technique to encourage preservation of agricultural, recreational, greenbelt lands, native pinelands, hammocks, and other open spaces within the urban area through the maintenance of private property and the protection of native and unique vegetation thereon.

30. All planning for the environment and land use by the County should be consistent and coordinated with regional, State and Federal level plans and controls for the South Florida area.

31. Zoning should be based on neighborhood or municipal plans prepared within the parameters established by the Comprehensive Development Master Plan for Metropolitan Dade County.

32. Use zoning as one means of assisting in the management of growth.

33. Use zoning and other regulations needed to limit development and population to the ecological restraints of a given area.

34. Give preference to area-wide zoning over lot-by-lot zoning.

35. Adopt ordinances, including one for Planned Unit Developments, which will permit balanced community developments providing for services, facilities and amenities, and which maximize the preservation of natural environmental features and aesthetically pleasing residential areas.

PART IV: ENVIRONMENTAL PROTECTION GUIDELINES

NATURAL ENVIRONMENT CRITERIA

The following discussion of the various zones and the development criteria which should be imposed upon them is based on the environmental implications that development in such areas will have. A description of each zone, a discussion of its importance as it is related to the environment of Dade County and the preliminary criteria developed for each zone follows: (See Figure 2-h).

Criteria Applicable to the entire Study Area

The following two General Environmental Considerations shall be considered minimum guidelines and should apply to the entire study area except where a greater degree of protection would be offered by a criterion within a specific zone.

General Environmental Considerations

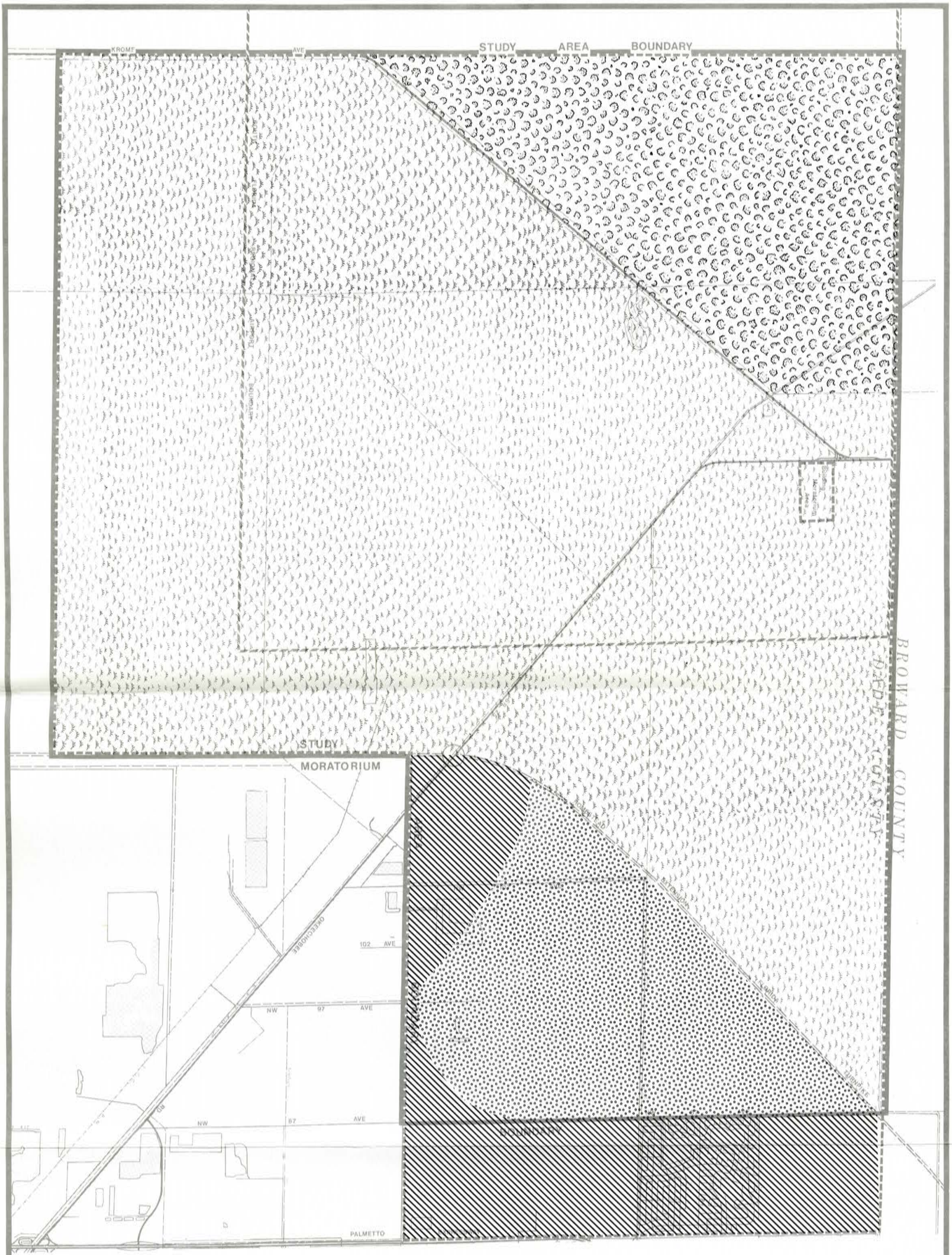
1. In case of a conflict between criteria proposed herein and other criteria which are a proper exercise of authority of a governmental jurisdiction, the more restrictive criteria shall govern.

2. The environmental impact of all future major developments shall be assessed under the proposed Dade County Development Impact Ordinance and the proposed Environmental Impact Ordinance which shall insure adherence to recommendations provided herein.

Drainage, Flood Control, and Water Quality

The construction of additional canals, ditches or other waterways is permitted only in accordance with the guidelines established for each specific Environmental Protection Zone.

Minimum flood protection and water quality control on future development is to be provided to the maximum extent possible through use of retention basins and/or grassy swale areas for handling surface water runoff. Undisturbed open space areas accompanying development may be used as retention basins. The degree of on-site retention will be a function of the site character and will depend on soil character, peak flow, storage volume, seepage rates, and water quality information as may be available from existing and future surface water runoff studies for Dade County.



I-75 / REGIONAL AIRPORT AREA PLANNING STUDY

NATURAL ENVIRONMENT PROTECTION ZONES

Figure 2-h

The approval of inland water body construction shall be contingent upon meeting the following guidelines:

Bulkheading shall be discouraged.

Surface runoff from new developments to be handled in accordance with the previous guideline on minimum flood protection is to avoid to the maximum extent possible the diversion of runoff directly to a water body through the following design considerations:

Setbacks
Proper contouring
Swale areas
Retention basins

No septic tanks are permitted on lots less than one acre. Septic tank approval on lots one acre or larger is conditioned on Department of Pollution Control approval based on soil and water table suitability which insures no adverse effects on public health. Septic tanks will be phased out as soon as the regional wastewater system is able to serve the various zones.

No septic tanks or appurtenances thereto are permitted within 100 feet of any surface water body.

The sponsors of developments are required to inform all prospective home buyers of the flood hazard from hurricane tidal surge or flooding from rainfall inundation, and from a combination of the two factors. The potential frequency and extent of inundation must be provided for a 10 year and 100 year flood.

Vegetation and Site Alteration

Within all areas of allowable site alterations the existing native vegetation is to be incorporated into the landscape plan of the development to the maximum degree possible.

Revegetation is to be accomplished with preexisting species or other suitable species except that the undesirable exotic species (see list below) are not to be replanted or propagated.

Ardisia (marlberry) - Ardisia Solanacea
Australian pine - Casuarina spp.
Bishopwood - Bischofia javanica
Brazilian pepper (holly) - Schinus terebinthfolius
Castor bean - Ricinus communis
Colubrina - Colubrina asiatica

Common snakeplant - Sanseviera trifasciata
Guava - Psidium guajava
Melaleuca (cajeput) - Melaleuca quinquenervia
Trailing wedelia - Wedelia trilobata

- Whenever possible tree islands should be preserved.
- Sawgrass subject to annual inundation should be preserved.

PROTECTION ZONE DESCRIPTIONS

Additional criteria based on the environmental sensitivity of each of the four areas follow:

Preservation Zone

The sector of the study area which is recommended as a Preservation Zone is the western-most sector of the study area. It is bordered on the north by the Dade-Broward County line; on the west by hypothetical 177th Avenue; and on the south and the east by L-30 and L-33.

The area described above is in the eastern margin of Flood Control District Conservation Area 3-B and is characterized by significant inundation much of the year. It is a crucial area for the recharge of the Biscayne Aquifer, particularly as it relates to the Hialeah and Miami Springs well fields.

The vegetation is characterized by sawgrass and sedges interspersed with tree islands including bay heads and willowheads. The soils are characterized by deep phase organics which play an important role in water retention, water quality, and aquifer recharge, and they are also important to the flora and fauna in the area. The valuable organic soils, which can rapidly disappear through oxidation, form very slowly and only when surface conditions are favorable for the peat forming process. All steps should be taken to insure that the necessary moist condition be maintained.

Preservation Zone guidelines:

These guidelines are considered minimum standards and apply to all preservation areas except where specific subzone guidelines offer a higher degree of protection for areas of greater environmental sensitivity. Any deviation from these guidelines must be justified in the Environmental Impact Statement.

No development is permitted which would remove or displace organic soils, native vegetation, or endangered species of wildlife. Restricted development includes, but is not limited to:

Rock pits or borrow pits
Paved surfaces or roadbeds
All structures

Passive recreation facilities and public facilities essential to public health, safety and welfare, approved under the Environmental Impact Ordinance, are regulated as follows:

> Where facilities for sanitary waste are necessary, self-contained facilities may be utilized.
>
> Transportation facilities which would retain, divert or otherwise block surface water flow of a 50 year storm must provide for the reestablishment of sheet flow through the use of interceptor spreader systems or performance equivalent structures and shall provide for passage of stream, strand or slough waters through the use of bridges, culverts, piling construction or performance equivalent structures or systems. Channelization of such areas shall be the minimum length necessary to maintain reasonable flow and prevent weed blockage.
>
> Placement of structures must be accomplished in a manner that will not adversely affect surface water flow or tidal action.

No activities which alter the depth, duration, or seasonality of inundation are permitted.

No tracked vehicles except for fire fighting purposes are permitted off roadways.

Conservation Zone

The Conservation Zone recommended within the study area occupies the largest area extent of the four zones and is bordered by the Dade-Broward County line on the north; L-33, L-30, and Krome Avenue on the west; 95th Street on the south and the Homestead Extension of the Florida Turnpike on the east. The area is characterized by periodic inundation and plays an integral part in the recharge of the Biscayne Aquifer. The high water table and lack of flood protection makes the area undesirable for development. The area has some organic soils remaining although much of the area's organic soils have oxidized or been burned leaving shallow organic soils or extreme cases of exposed marl.

The zone is still characterized by grasses, sedges, and scattered tree islands. There is significant invasion of exotic plants, primarily Melaleuca, Shinus, and Casurina, generally resulting from the drainage of these areas and subsequent burning.

In recognition of the value of this area as a viable, functioning recharge area, the following environmental developmental criteria should apply to this zone:

Conservation Zone criteria:

No septic tanks, package treatment plants, dumps or sanitary landfills are permitted in these zones. Self-contained waste treatment systems may be permitted.

Site alteration is limited to 25 percent of any given tract.

There is to be no further destruction of tree islands, bay heads, and willow heads.

High maintenance landscaping is discouraged and revegetation with native vegetation is encouraged to minimize water consumed for sprinkling and the necessity to fertilize.

Conservation Subzone Area B (C-2)

Water control facilities within this subzone are limited to water conveyance facilities (e.g., for backpumping) constructed solely for the purpose of water conservation or water quality control. Thus, water control for the sole purpose of providing flood protection for urban development, is not permitted. Such protection may only be realized through filling.

Sub-Marginal Development Zone

This zone is bounded on the east and south by the designated line approximating the western limit of flood protection provided by the Central and South Florida Flood Control District and the Dade County Public Works Department, Water Control Division; and on the west and north by the Florida Turnpike extension.

The area is characterized by flat terrain with elevations generally below 5 feet above mean sea level. The soils are predominantly Everglades peat shallow phase with some areas underlain by shallow phase sand over the limestone bedrock. Originally the area was covered with extensive sawgrass marsh. However, since the construction of the drainage system it has become predominantly prairie vegetation with stands of exotic arborescents becoming more numerous in recent years.

The yearly average water levels in this zone range from 1 to 4 feet above mean sea level. Since the elevation in this zone is below 5 feet above mean sea level and characterized by a peat soil, a wet marshy condition is prevalent. Inundations are not uncommon. The importance of maintaining such areas as wet prairies has been previously discussed and cannot be overstated. It is essential that the possibility of pollutants

from any source reaching ground water or open bodies of surface water be minimized, since water entering the ground in this area related to the preservation of the glades ecology to the west, and quality of potable water to the east.

Criteria applicable to development in this Sub-Marginal Development area are as follows:

1. No septic tanks or package treatment plants shall be permitted in this zone. Self contained facilities may be permitted.

2. Site alteration shall be limited to 50 percent within any given tract in this zone. The disturbance should be to the maximum extent possible confined to those areas impacted by exotic vegetation and to areas not characterized by organic soils.

3. The following vegetative associations shall be preserved to the greatest extent possible.

   A. Hardwood hammocks.
   B. Bay heads.
   C. Cypress domes.
   D. Mangrove fingers.

4. Water control facilities within these zones are limited to those additional facilities which will not potentially overload the primary and secondary drainage system now providing flood protection for Dade County.

Recommended land uses based on natural environment criteria:

1. Residential uses of varying density with adequate area for drainage.

2. Commercial and/or industrial use planned in conjunction residential neighborhoods.

Marginal Development Zone

The Marginal Development Zone is in an area which has the least environmental sensitivity and is, thus, more suitable for development than the other zones in the study area.

This recommended zone is bordered on the east by the Palmetto Expressway and N.W. 77th Avenue; on the south by N.W. 138th Street; on the west by the Florida Turnpike extension and the line approximating the western limit of flood protection and on the north by the Dade-Broward boundary.

The area is characterized by flat terrain at elevations of approximately five feet above mean sea level, although some areas may be lower due to oxidation of surface soil. The soils are generally high in organic matter. Soils series are Everglades peat shallow phase and shallow phase peat over shallow sand. This zone is underlain by considerably more fine sand than the remainder of the study area. Vegetation is predominantly prairie or improved pasture previously used for grazing.

The Marginal Development Zone is a former sawgrass prairie which has been drained. However, the annual mean high water table still rises to within one foot of the land elevation creating a rather moist soil condition during the wet season. The area is also an excellent aquifer recharge area as the peat soils retain water during wet periods, releasing it slowly when the water table subsides. As the peat soils retain the water they effectively filter nutrients and chemicals from reaching the water table through retention and ion exchange. These properties of peat soils (i.e. water retention and ion exchange) dictate the desirability of preserving these soils intact, particularly in belts between developed tracts and open bodies of surface water which tend toward accelerated eutrophication when receiving runoff from urban developments.* Disappearance of these organic soils by oxidation can be avoided only if a high degree of soil moisture is maintained, hence flood protection for development should be provided through selective filling of development sites rather than widespread positive drainage. This practice along with the diversion of surface runoff into vegetated swale areas will insure a higher quality of both ground and surface waters in the area.

This is a critical concern when one considers that the area in question is directly up-gradient and in direct influence with the Hialeah-Miami Springs well fields, Miami's primary potable water source. The deterioration of water quality in this area could lead to much greater costs in the long run for providing water of potable quality to the vast population served by the well fields.

Criteria applicable to development in this Marginal Development area are as follows:

1. Development shall, to the maximum extent possible, utilize organic soil pockets as soakage pits.

2. No septic tanks shall be permitted.

*Report of Investigation of the Environmental Effects of Private Waterfront Canals by Barada, & Partington, p.26, 27.

3. Water control facilities within these zones are limited to those additional facilities which will not potentially overload the primary and secondary drainage system now providing flood protection for Dade County.

Recommended land uses based on environmental criteria:

1. Residential uses of varying density with adequate area for drainage.

2. Commercial and/or industrial use planned in conjunction with residential neighborhoods.

3. Open space or agriculutural uses until development demand arises.

PART V: DEVELOPMENT GUIDE

OVERVIEW

The recommended configuration of land uses shown on Figure 2-i is consistent with the updating of the General Land Use Master Plan and is essentially based on the following factors: existing development trends in the North Dade Area to the year 1985, projected population for that year, the availability of community facilities and services, ownership patterns, development criteria based on environmental sensitivity as outlined in the Environmental Protection Guidelines (p.2-40), and the desirability of maintaining productive agricultural land. It also reflects the Recommended Metropolitan Development Policies recently approved by the Metropolitan Dade County Planning Advisory Board. The extent of urban development depicted on the map is carefully linked to the availability of water and sewer facilities, police and fire service, educational facilities and is shaped by the existing and proposed transportation network as well as environmental and noise constraints. The recommended land use plan is conceptual and is based on the assumption that the community's commitment to an aircraft training facility beyond the urban fringe will not considerably alter existing growth trends in the area. The plan also operates on the assumption that the proposed commercial jetport should not be considered as a growth generator at this time, since the County Commission on September 18, 1973, adopted a resolution (R-1154-73) stating that no construction for a new commercial aiport operation will be undertaken until it is clearly evident that the limits of existing facilities at Miami International have been exceeded. If and when there is a definite commitment to a commercial airport at Site 14 and after a detailed Airport Master Plan is approved by the County Commission, there will be ample time to commence a detailed land use compatibility study based on the existence of a commercial facility. In the meantime, urbanization to the year 1985 can be accomodated in that portion of the study area to the east of the proposed I-75 Extension as adequate public services become available. The rest of the study area west of I-75 should remain in its current use to the year 1985. Most public services will not be available to support urban growth in this area until then. The area is considered environmentally sensitive as well.

No significant noise impact on the population of North Dade should be experienced as a result of the proposed training facility. Plotted NEF* contours of flights from the training runway (Figure 2-i) indicate that noise-affected areas are a substantial distance from existing urban settlements, with the exception of noise sensitive activities and residences such as Thompson Park, Jones Fishing Camp, and a number of dwelling units within the boundaries of the airport site.

*NEF (Noise Exposure Forecast): A measure of the impact of aircraft noise on people, based on the frequency and intensity of the noise.

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RECOMMENDED LAND USE - 1985

- PRESERVATION
- CONSERVATION
- LOW MEDIUM DENSITY RESIDENTIAL 1.6-5.0 u./g.a.
- EXTRACTION AND AGRICULTURAL ACTIVITIES
- MEDIUM DENSITY RESIDENTIAL 5.1-11.0 u./g.a.
- COMMERCIAL
- INDUSTRIAL
- 4 / 2 STREET LANES CONSTRUCTION PHASE

THOUSANDS OF FEET

Figure 2-i

RECOMMENDED LAND USE PATTERNS

For the purpose of discussing the recommendations, the study area has been divided into the following three separate areas which are depicted in Figure 2-i.

1. Eastern Area - (Between N.W. 77th Avenue and the Homestead Extension of the Florida Turnpike; the Broward County line and N.W. 138th Street). The proposed urban land use pattern for the year 1985 reflects the availability of providing public services in this section of the study area. The proposed pattern adheres to the development criteria and land use recommendations established for marginal and sub-marginal natural environment protection zones (p. 2-45; Figure 2-h).

The 1985 western boundary for residential development is the proposed I-75 corridor which is approximately N.W. 92nd Avenue. There is a Low-Medium Density Residential District proposed within the area. This district should aim at preserving the single family characteristics of the existing Palm Springs North neighborhood which has a gross density of approximately 2.5 units per acre. The gross residential units per acre permitted in the Low-Medium Density District varies between 1.6 and 5.0. Maximum floor area ratio* should be 0.1 for commercial activity and 0.12 for office uses. The gross density concept approach is consistent with the preliminary criteria established for the Comprehensive Development Master Plan and is expected to encourage an adequate amount of parks and recreation land uses for the residents of new developments. The location of those parks should be decided concomitantly with all other urban functions and land uses at the time of project approval and subjected to the minimum requirements outlined in the Development Manual, currently being prepared. The recommended range of landscaping coverage is 30 to 60 percent of the development area, with a maximum of 60 percent for residential and institutional uses and 40 percent for commercial and office uses. In order to achieve these recommended densities and uses, future rezoning of this and other proposed residential districts should be contingent upon the availability of public services.

Most of Section 22-52-40 is in a district designated as Medium Density Residential. This district is primarily characterized by multi-family dwelling units of two or four story apartment buildings. The permitted number of dwelling units per gross acre ranges from 5.1 to 11.0. Existing zoning on this property would permit approximately 7.1 units per gross residential acre. The maximum floor area ratio for commercial uses should be 0.12 and 0.15 for office uses. The minimum recommended landscaping coverage for residential uses should be 55 percent and for commercial and office uses 35 percent.

The criteria in Appendix I should guide the distribution of land allocation in relation to the two recommended residential categories. These guidelines in Appendix F are consistent with the updating of the General Land Use Master

*Floor area ratio is the total floor area on a zoning lot, divided by the lot area of that zoning lot.

Plan and are mainly aimed at encouraging a proper amount of land uses in large tracts of land to be allocated for parks, recreation, and institutional uses.

The area between the proposed I-75 corridor (approximately N.W. 92nd Avenue) and the HEFT is important in terms of providing relief from continuous urban development. It is recommended for extraction and agricultural activities with the exception of the land in the vicinity of the HEFT - U.S. 27 intersection and the area immediately west of the proposed N.W. 186th Street interchange. In order to preserve a low density character, no development should exceed one residential unit per five acres or a floor area ratio of 0.05 which may include some commercial, institutional and even certain industrial land uses. If a commercial airport is ever constructed, extraction and agricultural activities between I-75 and the HEFT can provide a viable buffer between the noise produced by airport operations and residential areas to the east.

The land just east of the HEFT - U.S. 27 intersection is designated on figure 2-i as a potential distribution and highway service center. The N.W. 186th Street location is designated as a potential distribution center. Due to the highway newtwork, both locations will afford good accessibility to markets in South Florida, as well as the rest of the state. Since internal distribution efficiency will be maximized, transportation costs should thus be minimized.

The possibility of a satellite community has been suggested for Dade County by Barton-Aschman Associates, Inc., in the general vicinity of the eastern sector of the study area based primarily on the following two locational factors: 1) the area is situated in the midst of "regional" and "metropolitan" corridors of high accessibility and 2) it is directly in line with continued urban expansion. In addition, if a commercial airport is constructed in the future it would provide a wide range of employment opportunities. Even if the airport is never constructed the existing and proposed industrial uses in Miami Lakes in conjunction with existing industrial activity in Hialeah, could more than likely provide sufficient employment opportunities for residents of a satellite community as well as the surrounding labor market. It should be emphasized, however, that any development of a satellite community in the I-75/Regional Airport Planning Study area should be consistent with the recommended land use plan suggested in this report.

2. Western Area - (Between the Homestead Extension of the Florida Turnpike and the L-30 and L-33 levees; the Broward County line and approximately N.W. 95th Street). The proposed rural and semi-rural land use pattern recommended in this portion of the study area reflects the following two basic factors; 1) there will be few public facilities to serve this area to the year 1985 and beyond; and 2) this sector has been recommended as a conservation zone in the Environmental Protection Guidelines found in this report, which is consistent with the updating of the General Land Use Master Plan.

This district is important in terms of water recharge and for providing relief from continuous urban development. Since it is ecologically sensitive, its uses should be limited to rock mining, recreation and essentail (or valuable) public facilities. The area should provide a type of environment that is characterized by a very low density of development. No development should exceed one residential unit per 5 acres or a floor area ratio of 0.05 which may include commercial, institutional and even certain industrial land uses.

A limited amount of urban development should be considered in this area if it adheres to the environmental criteria for the conservation zone as spelled out in the Environmental Protection Guidelines on p. 2-44 and if it could be provided with all the supporting facilities and services for its operation without requiring public resources from other areas of the county. For any such proposal to be considered, the developer would have to show proof of his intention and financial ability to carry on such an undertaking.

3. Far Western Area - (Between L-30 and L-33 levees; N.W. 177th Avenue and the Broward County line). This land is designated as a preservation zone in the Environmental Protection Guidelines and is characterized by significant inundation most of the year. It is considered a crucial area for the recharge of the Biscayne Aquifer and its deep phase organic soils play an essential role in water retention and water quality. Except for recreation activities and essential (or valuable) public facilities, all other uses which would remove or displace organic soils or vegetation, alter the depth, duration or seasonality of inundation shall be prohibited unless justified in an Environmental Impact Statement.

Summary

It is estimated that it would be possible for up to 19,000 dwelling units to be located east of I-75 based on the recommended land use pattern. This figure was arrived at by considering the existing development, the present plans for development, the availability of services, ownership patterns and the recommended densities for each land use category. By using an average of 2.5 persons per dwelling unit, it is estimated that this area could accommodate up to 47,500 people. The projections discussed in the Population Section, however, show that around 26,000 people will probably be living in this area by 1985.

The rate of growth this area actually experiences is dependent upon the amount of development that takes place in other sections of the county and on the attractiveness of this area compared to other areas of the county based on accessibility and the availability of services. It is possible that a continuation of the fuel shortage will make closer-in locations more attractive than the study area. In addition, economic conditions and reductions in fuel supplies and the projected numbers of scheduled flights could conceivably place the need for a regional airport at this location further into the future.

For now, it seems that there is much more land available than will likely be needed for development by 1985.

INFRASTRUCTURE

This section of the study deals with the community facilities and services that will be required in the study area in order to achieve the concepts embodied in the Development Guide. The intent of these proposals is to use the timing and location of community facilities in the study area as a tool for implementing the recommended land use plan. The recommended transportation facilities shown on the recommended land use plan for the study area have been designed to provide the necessary access for the type of development called for in the plan.

The recommended land use plan depicted in Figure 2-i defines three basic types of land use categories for the study area. The western section falls into either an environmentally sensitive preservation or conservation zone. Since development in this section is being discouraged due to the various reasons enumerated in the Environmental Protection Guidelines, most public facilities such as roads, utilities and schools should not be extended into this area. Parks and recreation areas within the western sector would, however, serve to preserve natural resources and provide suitable recreation areas. They would also serve to reserve lands for uses compatible with a regional airport should the decision be made to build the commercial facility. As far as roads are concerned, S.R. 27 should remain as a two lane facility since traffic projections made for 1985 (with little or no development in the study area) indicate that no congestion will result if the facility is not widened. As mentioned in the transportation section on programmed improvements, U.S. 27 is scheduled to be widened to six lanes between the Palmetto Expressway and Florida's Turnpike and four lanes from the Turnpike north past the county line. A frontage road should be built on the north side of the improved facility (the Miami Canal forms the southern boundary) in order to prevent premature road-side development in the area. The frontage road need not be built at the same time as the main roadway but the right-of-way should be zoned for a frontage road and then acquired through the subdivision process. Thus, the frontage road (especially between the Palmetto Expressway and the Turnpike) would not be provided until the necessary zoning was granted for development to occur in the area. North of the Turnpike, the area falls into a conservation zone, and no roadside development should be permitted which is not consistent with the criteria in the Environmental Protection Guide.

The Homestead Extension of Florida's Turnpike has been used in the land use map to delineate the eastern boundary of the Conservation Zone. As mentioned previously, the Turnpike presently has only one interchange

in operation in the study area, located at U.S. 27. Turnpike plans, however, call for the construction of one additional interchange and four additional grade crossings within the study area. If built prematurely, i.e. not timed together with the provision of other public services, these proposed grade crossings would open the area between I-75 and the Turnpike to premature development and also encourage development on the western side of the Turnpike in the proposed Conservation Zone. The proposed interchange is located at N.W. 106th Street. This interchange should not be built before 1985, if at all, because to do so earlier would open up the area between the Palmetto Expressway and the Turnpike to development that could not be serviced by currently programmed public services. Furthermore, since the area west of the H.E.F.T. should not be urbanized, the interchange, if it is built, should not be built as a full Cloverleaf but should provide movement to and from the east only. Land in this area, due to various ecologic functions, may be used for extraction uses and should not be converted to residential development. For this same reason, the present structures at N.W. 114 and 138 Streets should not be lengthened to allow for an arterial roadway to be built under them. At N.W. 155 and 170 Streets present plans call for the construction of a 4-lane and a 6-lane grade crossing, respectively. These should not be built since these streets should not be extended west of the Turnpike. At N.W. 187th Street, future right-of-way can be acquired for a 4-lane grade crossing. Again, this structure should not be built until 1985 and the street not extended west past the Turnpike.

The land use plan calls for extraction and agricultural activities in the area between I-75 and the Turnpike. Two locations in this area also offer the accessibility potential for the development of major warehousing and distribution centers. One center could be located south of the interchange between the Turnpike Extension and I-75. This location would permit easy access to the major markets in Broward County via the Turnpike and I-75 and in Dade County via I-75, the Turnpike to the south, and the Opa-locka Expressway. I-75 would provide the link between South Florida and the marketing and production centers in the remainder of Florida and throughout the entire country via the interstate system. Since the interchange between the two highways does not permit access to nearby property, the primary access point to this possible distribution center would lie on N.W. 187th Street. The other distribution center which would enjoy good regional accessibility lies at the interchange between the Turnpike Extension and U.S. 27. At this location, the Turnpike Extension would provide the accessibility to points in Broward County and South Dade, while U.S. 27 would provide the accessibility for central Dade County and the rest of the State. N.W. 138th Street should be extended west to this interchange in order to provide for an alternate route into Dade County (via the Opa-locka Expressway).

The construction of Interstate 75 will greatly improve the accessibility to the study area from the coastal urban centers of Dade and Broward counties. The result of this increase in accessibility would be an increase in economic activity and land development along the corridor. In interchange areas, pressures for intensive and rapid development can thus be expected.

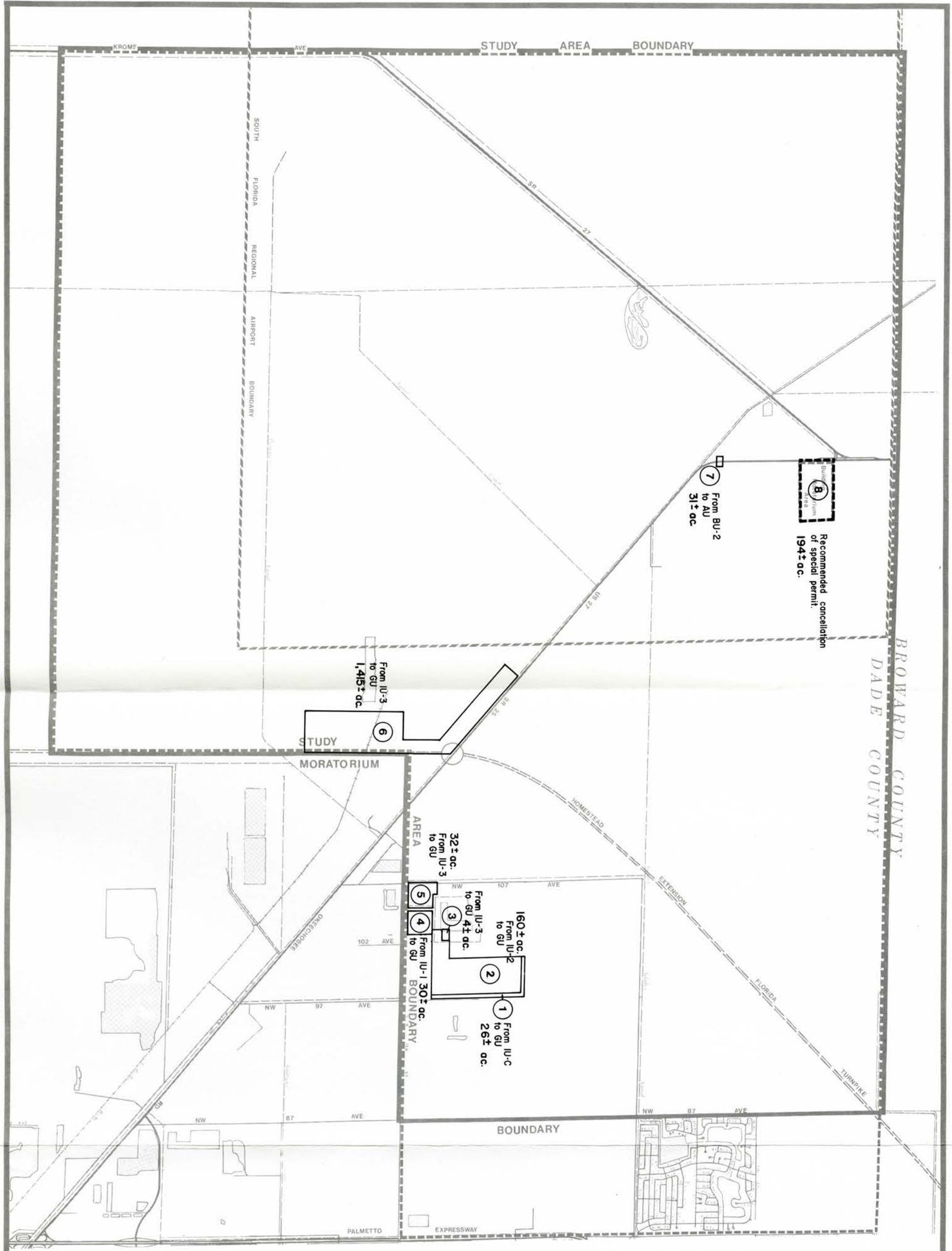
Due to the Interstate's impact upon noise of the immediate area, development should be restricted to uses that would not suffer from this impact. Commercial and industrial uses would not be overly impacted in such areas. Noise measurements should be taken along I-75 to insure that incompatible development does not occur near the highway. Design noise level/land use relationships have been presented in the Federal Highway Administration Policy and Procedure Memorandum 90-2.

In locations where the major county trafficways have not been completed, the construction of proposed interchanges and grades separation structures should be deferred until the development in the area warrants their addition. This procedure will tend to retard the expected accelerated development in the vicinity of the proposed interstate. Thus the grade crossings at N.W. 187 and 170 Streets should not be built before 1980.

The section east of I-75 has been recommended for residential development. The section line, half-section line, and frontage roads needed in this area are indicated on the land use map. The main access roads to the eastern section of the study area would be along N.W. 186th and 167 Streets. N.W. 87 Avenue would be the main north-south arterial through the residential area. Those roads footnoted with 1 (on Figure 2-i) are already improved or should be built by 1980, while those footnoted with a 2 should be built by 1985. This timing of transportation facilities will thus coincide with the provision of other public services in the eastern portion of the study area. These community facilities and services include a 20" water main programmed to extend to N.W. 87th Avenue by 1975 and a 30" sewage main scheduled to run from N.W. 138th Street up to Palm Springs North along N.W. 77th Avenue by 1977. In addition, the Country Club of Miami Development Plan calls for schools in Section 3-52-40, just north of Palm Springs North and one new fire station is scheduled for completion by 1980 on N.W. 97th Avenue and 170th Street.

The previous facilities have been recommended based on the assumption that a commercial jetport will not be developed at site 14 before 1990. If and when the South Florida Regional Airport is built at this site, a separate controlled access facility should be built as the link between the airport terminal and South Florida's Expressway system. This access facility might proceed west from the Turnpike Extension into the Jetport at approximately N.W. 187th

Street. U.S. 27 should not be used to provide passenger access to the Jetport because to do so would create intense pressures for development alongside this road and in the environmental conservation area west of the Turnpike Extension. Primary access to the Jetport should be provided by an express transit link between the Jetport terminal and Dade County's rapid transit system, as proposed by the Environmental Impact Statement prepared as part of the South Florida Regional Airport Site Selection Study Program. As stated in that report, landside access has been predicated as a conscious effort to encourage the shift of airport access toward public transit. Unlimited use of the automobile will not be feasible because if the highway system is not greatly expanded to meet ever-increasing traffic demands, it will develop unacceptable operational problems; however, if the highway system is greatly expanded, then the traffic increases will create unacceptable environmental impacts. Thus, policy and operational measures will be taken to discourage the use of automobiles and to encourage the use of mass transit modes to and from the proposed Jetport.



I-75 / REGIONAL AIRPORT AREA PLANNING STUDY

RECOMMENDED REZONING

IU-1 : Industry Light
IU-3 : Industry Unlimited
IU-C : Industry Controlled
BU-2 : Business Special permits variety of uses including liquor store
GU : Interim depends on character of neighborhood

THOUSANDS OF FEET

Figure 2-j

PART VI: IMPLEMENTATION

RECOMMENDED ZONING DISTRICT CHANGES

During the development phases in and around the study area, certain land use changes will be inevitable. However, it would be rather premature, at this time, to recommend a rezoning of all or most of the property based on the recommended land use plan for the study area until adequate public services are provided to warrant such a change; then the rezoning on such land should be timed and in tune with the availability of public services.

Furthermore, a zoning configuration based on a specific approved site plan which follows the guidelines set out in the recommended land use plan for the study area should be initiated by the developer as public services become available. This approach would be more desirable and more in tune with good land use planning than that of departmental initiated zoning of a major portion of the study area.

There are a number of uses within the study area that are considered as transitional uses, such as, lake excavations. The existing zoning that these uses are operating under are not necessary for either the continuation or implementation of such uses. Once these transitional uses are discontinued or no longer desired, the respective zoning districts may be subjected to other uses that are permitted by the zoning ordinance that will possibly be incompatible with the recommended land use plan and/or the surrounding area. Accordingly it is justifiable to recommend the following zoning changes depicted in Figure 2-j:

Parcel #1 - IU-C to GU - This L-shaped 200 foot strip of land of approximately 26 acres is a portion of a 285 acre plot of land (all under one ownership) and is presently zoned IU-C. It is currently being utilized in conjunction with a lake-excavation operation. The property was originally zoned GU, interim district, and subsequently rezoned to the existing configuration by the Board of County Commissioners in July, 1963, under Resolution Z-148-63.

Under existing Dade County legislation it is no longer necessary to obtain an industrial zoning classification to carry out lake-excavation projects; the same can be accomplished by acquisition of a special permit designed specifically for this purpose. It is therefore recommended that the zoning on this parcel be changed from IU-C to GU.

Parcel #2 - IU-2 to GU - This parcel of approximately 160 acres is included in the aforementioned 285 acres. Within this parcel is a portion of Rinker Lake and a tract of land which is used for the manufacture of concrete blocks. The acreage contiguous to Parcel 2 on the west and under the same ownership was rezoned to GU from IU-2 and IU-C in April, 1972, by the Board of County Commissioners under Resolution Z-131-72. This parcel is also used for lake excavation.

The existing zoning on this parcel was determined by a series of resolutions passed by the Board of County Commissioners. The initial request was initiated and approved by the Commission in November, 1960, under Resolution 5988. Subsequent to this resolution was Resolution Z-61-62 approved in February, 1962, and Resolution Z-1218-63 approved in July, 1963. All of these resolutions approved industrial zoning on various portions of this parcel. A special permit was also approved, Resolution 5626 in September, 1960, allowing a rock crusher, batching plant, rock and sand yards, lake excavations, and cement and clay products and allied uses.

Due to the fact that a special permit can now be obtained for lake-excavations and industrial zoning is no longer necessary for these operations and also that the lake-excavation to the west of this parcel was rezoned to GU by the County Commission, it is recommended that the IU-2 zoning on this parcel be likewise changed to GU.

Parcel #3 - IU-3 to GU - This parcel encompasses approximately four acres and dates back to April, 1961, under Resolution Z-46-61 when a district boundary change from IU-2 and GU zonings to IU-3 was approved. A recent inspection of the parcel indicated that this land is not being utilized in an industrial capacity.

Since the industrial zoning on this parcel was initially requested in relation to a lake-excavation project, the same procedures apply as was indicated in the discussion of the previous two parcels, that is, a special permit can be acquired. therefore, it is recommended that the IU-3 zoning be changed to GU.

Parcel #4 - IU-1 to GU - The history of this particular 30 acre parcel dates back to November, 1956, when Resolution No. 10578 was approved. The applicant requested a zoning change from a GU, interim district, to that of a IU-2, industrial heavy manufacturing district, or a special permit providing for excavation. The special permit was approved while the request for the IU-2 zoning was denied on the basis that it would be in conflict with the principles and intent of the plan for development of the County. However, a change to IU-1, industrial light manufacturing, was approved and adopted in February, 1962, under Resolution Z-63-62.

A change in zone from IU-1 to GU is recommended because there have been no land improvements since the parcel was originally zoned. Current uses should be permitted to continue under a special permit or a legal non-conforming use.

Parcel #5 - IU-3 to GU - Parcel #5 encompasses approximately 32 acres and was recently (December, 1971) rezoned IU-3, heavy manufacturing district, to provide for the development of concrete related industries, such as a ready-mix concrete plant, a steel reinforcing bar handling and storage facility, a building material warehouse, and a pre-stress concrete plant and office. This change is reflected in Resolutions Nos. 4-ZAB-554-71 and Z-270-71. The intended use is considered to be compatible with the surrounding activities and land uses. However, this use should be able to continue through the use of a special permit or as a legal non-conforming use.

The subject property is indirectly associated with lake excavation, a temporary use, and subsequent to the discontinuance of such use, the property will be vulnerable to uses that may be incompatible with the recommended land use plan for the study area and /or the surrounding area. Therefore, it is recommended that the existing zoning be superceded with a GU zone.

Parcel #6 - IU-3 to GU - The subject property includes approximately 1,415 acres which was recently (September, 1970) zoned IU-3, industrial unlimited manufacturing district, a change from GU, interim district, and AU, agricultural district. The adopted change is reflected in Resolution No. 207-70, which permitted the zoning change and an unusual use to permit two lake excavations and removal of aggregate materials.

The lake excavations are compatible with the use in the surrounding area, but considered to be of a temporary nature. In recognizing the fact that the subject property use is temporary and may become vulnerable to incompatible uses and perhaps conflict with the recommended land use plan for the study area subsequent to the discontinuance of such temporary use, it is recommended that the property be rezoned to GU, interim district.

However, the existing use should be permitted to continue through the issuance of a special permit or function under a legal nonconforming use until such use is discontinued or no longer desired.

Parcel #7 - BU-2 to AU - Parcel #7, encompassing approximately 31 acres and contiguous to both the east and west side of U.S. #27, is located in a conservation zone as outlined in the Environmental Protection Guidelines. Upon a visual inspection, it was noted that there were no improvements toward establishing any type of business permitted under the current BU-2 zone. In fact, there were indications that a portion of the subject property is currently used as an unofficial dump.

It is therefore justifiable to recommend a zoning change from the existing BU-2 configuration to that of AU. This is based on the fact that a BU-2 district in proximity to U.S. 27 at this time would be permature. In addition, a BU-2 district in this area would further encourage unwanted strip commercial development along U.S. 27.

Parcel #8 - Repeal of Special Permit (Original Building Moratorium) - A special permit for approximately 194 acres under County Commission Resolution No. 3957 adopted September 24, 1959, for a truck stop, garage, filling station, trailer park and lake excavation was considered active and therefore an area of serious concern in the original zoning moratorium area. Therefore, a building moratorium was requested by the County Manager and subsequently approved by the County Commission on October 2, 1973.

These proposed uses would represent unrelated and incompatible spot uses within a large undeveloped area of Dade County. If implemented they would be incompatible with existing and projected land uses in the study area.

It is recommended that the special permit for the above named uses on this property should be cancelled through the use of the provisions of Ordinance No. 73-104 which is applicable to this area:

> "... Upon application of the Director, any variance, special exception, new use, special permit...heretofore... granted that is not utilized within a three year period following the date of grant or approval, may be terminated by the Board of County Commissioners, after the required noticed public hearing...that to permit same to be used would be detrimental to the area and incompatible therewith..."

LAND USE CONTROLS FOR NATURAL ENVIRONMENTALLY SENSITIVE AREAS

Legal tools which can be used for preserving open space lands include: land banking, preferential property taxation, easements for development rights, outright purchase, and zoning regulations. Changes in the existing zoning code and the establishment of new zoning categories would achieve at least part of the objective of preserving the natural areas in Dade County. An increase in the minimum lot size for AU and GU districts to five acres has recently been approved.

The zoning ordinance for Dade County does not provide a district specifically for open space lands. The present AU, agricultural and GU, interim (general use) zoning districts offer some protection for preservation and/or conservation areas. Both of these districts permit uses, however, that could be detrimental to the natural environment in these areas. Thus, until legal tools which provide an ultimately desirable level of protection can be drafted and adopted, the following tools should be immediately considered for the protection of environmentally sensitive areas.

Environmental Impact Ordinance

The tool which demands immediate attention and is of greatest importance in implementing key recommendations of this study is the Environmental Impact Ordinance. Ostensibly, this ordinance will contain the elements necessary to provide substantial protection within designated Preservation and Conservation Environmental Protection Zones as well as within the unique vegetative

associations of mangroves, hammocks, and pinelands. This law will, therefore, require the submission of an environmental impact statement which must justify the proposed activity within any area for which the law is applicable. The impact statement for activities within these areas of critical county concern must state all impacts on the natural environment and must justify any deviations from the guidelines for the designated areas as embodied in the Environmental Protection Guide (EPG). These deviations from permitted uses or recommended site alteration limitations must be thoroughly justified on scientific grounds. Although it cannot be assumed that maximum protection will be provided for these critical areas, substantial protection should be provided until legal research on all potential protection mechanisms can be completed.

Special Zoning District

In such cases where adequate protection for the Conservation Zone or for mangroves, hammocks, or pinelands cannot be provided through the proposed Environmental Impact Ordinance a second tool should be considered. This tool would be a special zoning district, a second tier of zoning, which would superimpose over all existing zoning districts the following regulations: first, any zoning permitted within the Conservation Zone delineated by this study would be subject to the site alteration limitation and all other guidelines presently applicable to the Conservation Zones; second, any zoning permitted within mangroves, hammocks, or pinelands would be subjected to previously recommended site alteration limitations and other regulations embodied in the guidelines for these areas. Such a tool would not specify permitted densities, this would be determined by existing zoning but would impose regulations over and above those embodied in the zoning district dictating permitted density.

Developmental Impact Ordinance

A Developmental Impact Ordinance, unlike the Environmental Impact Ordinance, would provide a systematic and comprehensive review process for development in all Dade County. The tool should require developments of more than 250 units and meet the standards set for the State of Florida's "Developments of Regional Impact" to submit an impact statement outlining the impact the proposed project will have based on consideration of the following factors:

1. Natural characteristics, including geology, soils, hydrology, plant groupings, rare or endangered species, and wildlife habitats;

2. Changes in micro-climate, surface water runoff, natural vegetation, air quality, and effects on topography or landscape resulting from soil removal;

3. Design process and its relationship with the natural characteristics of the site and surrounding area;

4. sewage generation and capacity of treatment facilities;

5. Water consumption and availability;

6. Storm water runoff and retention;

7. Traffic generation and capacity of roads and public transportation facilities;

8. Projected school enrollment and capacity of existing facilities.

Wastewater Disposal Ordinances

Another area where protection is needed is the effective regulation of septic tanks and package treatment plants. Although some ongoing studies exist on the water quality effects of septic tanks these conclusions cannot be appropriately applied to areas off the coastal pine ridge where the most severe problems exist due to a high water table and low permeability of the soils. An ordinance should be adopted which would take a very conservative approach to permitting septic tanks; such action should insure that effective precautionary measures for the protection of our drinking water supply - the Biscayne Aquifer - are taken. The guidelines of the E.P.G. should be considered an appropriate starting point with septic tanks to be prohibited from Preservation, Conservation, Submarginal, and Marginal Zones. Package treatment plants which presently come under county ordinance only in the requirement of a permit and a public hearing should be regulated more rigidly with them prohibited in Preservation, Conservation and Submarginal Zones.

Land Banking

Another implementation tool which could assure the realization of the goal to restrict development in the Conservation and Preservation Zones delineated in this study is land banking. Land banking by the County could be accomplished through the use of general obligation bonds and is the tool which in the long run has the greatest potential for preserving natural areas. Immediate investigation into the possibility of floating bonds for the purchase of lands in designated Preservation Zones and in some Conservation Zones should be pursued. Precedents for land banking is common, particualry in Canada and Europe. The

extent to which the government in Dade County can become involved in land banking depends on powers granted by the State enabling legislation. However, if the powers are available, a program should be developed which would provide for the return of some purchased lands in the Conservation Zones to the private sector with restrictive covenants or deed restrictions accompanying the sales. The resale of land by the government would serve a two-fold purpose. First, it would avoid the legal complications involved in zoning where the restriction of an individual's use of this property may conflict with the constitutional rights of the individual to use that land. Second, through the use of covenants or deed restrictions, it would provide the County with an effective method of restricting the use of land to appropriate intensities of development. If implementing a land banking program proved to be time consuming and required drastic changes in governmental policy and responsibility, it could be preceded in the interim by zoning changes or other implementation tools. Ultimately, the consideration of public purchase may be necessary in the Preservation Zones.

NEIGHBORHOOD STUDIES

This study, because of its immense size and sparse population, has been considered as a sub-area study instead of a neighborhood study. The area includes a number of existing and proposed neighborhoods which will be studied as part of an overall County-wide neighborhood planning process.

The Planning Department will evaluate each neighborhood on a priority basis in future studies. These priorities will be based on a quality of life index and developmental pressures.

PART V11: CONCLUSION

SUMMARY

The recommendations in this study have been directed toward protecting the existing character of the developed area, protecting the land considered environmentally sensitive, and toward establishing compatible land uses in the area, most of which is still vacant. Such proposals should be used as a guide when formulating any new development for the I-75/Regional Airport Planning Study area.

It would be presumptuous to recommend a detailed configuration of urban uses at this time in this planning district which for the most part is environmentally sensitive and which is not programmed for public services in the foreseeable future, based on the existence of a public facility (proposed regional airport) whose dimensions have not been determined and whose need by the community is still uncertain.

It is also quite possible that the current energy crisis with its accompanying gasoline shortages could spark a return to the city and produce a retardation of urban sprawl in this and other areas along the urban fringe. The energy crisis has temporarily affected the traffic at Miami International Airport and could conceivably push back the need for a new regional airport further into the future.

Appendix A

Letter From Mr. James Redford

Committee for Sane Growth

2829 Bird Avenue • Miami, Florida 33133

November 13, 1973

County Manager Ray Goode
c/o Dade County Court House
W. Flagler Street
Miami, Florida

Dear Mr. Goode:

This letter is a formal request for an immediate building and/or rezong moratorium on Areas 5, 6 and 16 as designated in the accompanying Izaak Walton League's Fresh Water Report. We ask that this moratorium should remain in force (by renewals if necessary) until the official water inventory is completed by the Central and South Florida Flood Control District and the Dade County Master Development Plan is adopted by the County Commission. The boundaries of Areas 5, 6 and 16 are given on an enclosed paper.

As you probably have learned from your investigations, we were truly short of water during the 1971 drouth. We were able to cut back water consumption by 20% on a voluntary basis which was lucky because that was precisely the amount we were short. It has been 2½ years since that drouth, and the only major move by anyone to remedy the conditions of that year was the passage of the 1972 Water Management Act. This Act set up water regions in Florida. The Central and South Florida Flood Control District was given charge of the region in which we live.

The C&SFFCD is in the process of measuring the amount of water available in the Biscayne Aquifer. From this they will work out a water allotment system for each of the counties to be served. Already Palm Beach County has told the C&SFFCD that their maximum population should be in the vicinity of 1,000,000 people. We are told that their water allotments will be made based on this figure. Broward County is in the process of doing the same thing.

Why need we be concerned about fresh water?

I have already said that nothing concrete has been done to increase the amount of available fresh water since 1971. However, our population has increased by at least 100,000 and Broward County, which is 'up stream' in the aquifer, has

also increased 100,000. Now, according to Garrett Sloan's estimation, we could achieve a 20% cutback in consumption by voluntary rationing of car washing and lawn watering. However, Mr. Sloan points out that to get 30% cutback, police-enforced rationing would be needed, and anything more than that could be accomplished probably only by decreasing the water pressure. In other words, with our and Broward's increase in population and given the conditions of the 1971 drouth, we probably would need police-enforced rationing immediately and a decline in the water pressure a very few years from now.

During all this talk of water shortages, we have been told that alleviation was just around the corner. The cure was to be raising of Lake Okeechobee's level and back pumping of water on the Tamiami and C51 Canals. The raising of the lake is, according to the present information of those concerned, highly improbable in the near future. As for back pumping, the Environmental Protection Agency is showing grave doubts as to the quality of the waters to be pumped. The question of the effect on the Everglades in the conservation areas has been raised. This is not to say that there will be no back pumping; it is only to say that it probably will take sometime before EPA will approve it. As you probably know, there were no appropriations at the Federal level for these projects in the last Public Works Bill.

In speeches given recently by Ed Dail, executive director of the C&SFFCD, the immediate solution to Dade County's water problems is to move approximately 8 miles westward from the present well sites, and there put down wells sufficient to supply our population in time of drouth. These wells would be used only during drouth times because the salt intrusion line would probably penetrate further inland through neglect if we depended solely on the far-western wells. This project, according to Mr. Sloan, could cost as much as $40,000,000, requiring approximately a 50% raise in all water bills in Dade County. The areas designated as 5, 6 and 16 have been reckoned to be the major aquifer discharge areas in Dade County. Much of this land is low. It would require fill to develop. Building at the rate of 4 units per acre could pave over from 50 to 60% of the land reducing its recharge capability. Impacked fill reduces the ability of the land to retain water. The canals or lakes which would have to be dug to supply the fill could create a serious water quality problem. We, therefore, maintain that it is nothing but good sense to declare this moratorium. And 'good sense', in our opinion, is the prime ingredient in running a government.

The Committee for Sane Growth presently represents 18 organizations throughout Dade County. Enclosed is a list of the names of these organizations. Our estimate is that their total membership would amount to approximately 15,000 to 20,000 people, enough to give a serious hearing.

We hope you agree with our reasonings and rule accordingly.

Sincerely yours

[redacted]

James F. Redford, Jr.

JFR:m
Encs.

APPENDIX B

LEGAL DESCRIPTION OF THE ZONING AND BUILDING

MORATORIA AREAS

Original Legal Description: I-75/Regional Airport Area Planning Study (58 sq. miles)

The zoning moratorium coincides with the area delineated as follows: All of Sections 4, 5, 6, 7, 8, 9, 16, 17, 18, 19, 20 and 21 of Township 52 South, Range 40 East; and all of Sections 1 through 36, inclusive of Township 52 South, Range 39 East; and all of Sections 1 through 6, inclusive of Township 53 South, Range 39 East.

The building moratorium was initiated for a parcel delineated as follows: The North 1,600 feet of the S½ S½ NE¼ and SE¼, less West 100 feet, in Section 3, Township 52 South, Range 39 East, lying on the east side of Krome Avenue at U.S. Highway 27 (Okeechobee Road).

On March 19, 1974, the Airport Study Area was included in the East Everglades Moratorium Area with legal descriptions as follows:

Area Currently Under A Zoning Moratorium To Be Expanded To Include Building Moratorium (58 sq. miles)

The north boundary is the North County line. Begin at the intersection of theoretical N.W. 87 Avenue and the North County line, (N.E. corner Section 4-52-40), proceed west along the County Line to theoretical N.W. 177 Avenue (N.W. corner of Section 6-52-39). thence south along theoretical N.W. 177 Avenue to theoretical N.W. 90 Street (southwest corner of Section 6-53-39, thence cast along theoretical N.W. 90 Street to N.W. 117 Avenue (southeast corner of Section 1-53-39), thence north along N.W. 117 Avenue to theoretical N.W. 138 Street (southeast corner of Section 24-52-39), thence east along N.W. 138 Street to N.W. 87 Avenue (southeast corner of Section 21-52-40), thence north along theoretical N.W. 87 Avenue to point of beginning.

New Moratorium Area (252 sq. miles).

Begin at the intersection of theoretical N.W. 90 Street and east line of Levee 30 (Krome Avenue); south and southwest along Levee 30 to the Tamiami Canal thence west along the Tamiami Canal to the easterly boundary of Everglades National Park, thence southward and eastward along Everglades National Park boundary through U.S. 1 to C-111, thence northwesterly along C-111 to Levee 31-north, thence northward along Levee-31 north to theoretical North Kendall Drive (southwest corner Section 36-54-38); thence east along North Kendall Drive to Krome Avenue (southeast corner of Section 36-54-38), thence north along Krome Avenue to theoretical S.W. 42 Street (southwest corner of Section 18-54-39), thence east along theoretical S.W. 42 Street to theoretical S.W. 157 Avenue (southeast

corner of Section 17-54-39), thence north along theoretical S.W. 157 Avenue to the Tamiami Canal, thence east along the Tamiami Canal to theoretical S.W. 137 Avenue; thence north along 137 Avenue to theoretical N.W. 41 Street (southeast corner of Section 22-53-39), thence east along N.W. 41 Street to N.W. 117 Avenue (southeast corner of Section 24-53-39), thence north along N.W. 117 Avenue to theoretical N.W. 90 Street (southeast corner of Section 1-53-39), thence west along theoretical N.W. 90 Street to point of beginning.

Appendix C

Letter From Ed Dail
Executive Director, Central & Southern
Florida Flood Control District

G. E. DAIL, Jr., Executive Director

CENTRAL AND SOUTHERN FLORIDA

FLOOD CONTROL DISTRICT

P. O. BOX V
WEST PALM BEACH
FLORIDA 33402
Telephone (305) 655-3411

IN REPLY REFER TO: 9-1-2A

June 12, 1974

Mr. Reginald Walters, Director
Metropolitan Dade County Planning Department
702 Justice Building
1351 N.W. 12th Street
Miami, Florida 33125

Dear Mr. Walters:

This is written in response to four questions posed by Mr. Paul Mushovic, of your staff, in a meeting held with certain of this District's staff on June 11, 1974, at West Palm Beach. These questions were asked in connection with your proposed report to the Metropolitan Dade County Commission on the East Everglades Moratorium Study Area.

In the following paragraphs the four questions will be enumerated, and the questions themselves stated (perhaps in paraphrase). Our responses, to the best of our present knowledge and ability, will follow each question. References made to a map are to the map furnished by Mr. Mushovic which divided the entire study area into five sub-areas.

1. Are there any further proposals for flood control works or District projects in the South Dade Area?

Insofar as works whose major purpose is to provide flood protection and improved drainage are concerned, the answer to this question is "no." Included in the originally authorized South Dade County Plan were Canals 106, 107, 108, 109, and 110, whose functions were flood control and improved drainage. By Board Resolution No. 74-14, dated February 15, 1974, Canals 106 and 107 were placed in an inactive status. Previously, the construction of Canals 108, 109, and 110 was halted and these items will also be placed in an inactive status.

The same Resolution No. 74-14, placed in an inactive status as well the several items (canals, levees, and pumping stations) which constituted the authorized Southwest Dade Plan.

However, there are other District works whose purposes are other than flood control or improved drainage which are proposed for construction or are under consideration. Chief among these is the water conveyance system whose purposes are: (a) to deliver supplemental water to South Dade County to maintain adequate salinity control elevations and groundwater stages; and (b) to furnish required minimum annual flows to the Taylor Slough and Eastern Panhandle portions of Everglades National Park. No new canal construction is involved; only enlargement of certain portions of the existing system.

Also authorized for construction, and under consideration by the District, is the proposal for backpumping Tamiami Canal. In the District's view the primary consideration here is water supply. If a backpumping plan is implemented, based on justification in terms of water supply, it will also provide some improvement over existing conditions in the western Tamiami Canal basin in terms of flood protection and drainage capability. The extent to which a higher degree of service in these respects is afforded is dependent upon the constraints imposed and criteria established prior to initiating the design process. This will be elaborated on in the answer to Question 4.

Finally, although not presently being actively considered, the District intends in the near future to re-open with the Corps of Engineers the matter of providing a permanent salinity barrier structure in Canal III to replace the existing culvert installation and earth plug, S-197.

2. In regard to the water supply study to be completed by the District by January 1, 1977, what exactly will this study tell us about the five sub-areas indicated on the map?

The District's water supply study is examining four means for making optimum safe and environmentally acceptable use of the region's fresh water resources. These are: increasing the water storage capability of Lake Okeechobee, backpumping lower east coast area runoff, underground injection, storage and recovery of surplus surface water, and development and management of the water table aquifer systems.

That element of the District's study which impinges most directly on the five sub-areas under consideration is that dealing with safe development of the aquifer. All these areas are underlain by the Biscayne Aquifer. The large supplies of water available in the aquifer in these areas are presently un-tapped. Significant quantities of treatable water can be extracted from the aquifer in these areas. Our studies are designed to develop alternative use and management programs for the Biscayne Aquifer system which will involve recharge/discharge relationships and determination of "safe yield." With specific regard to the five sub-areas our work will establish the potential for the development of additional water supplies within the boundaries of the areas and the measures required to maintain both satisfactory long-term and short-term recharge/discharge balances.

The District's study of backpumping performance with respect to water supply will involve considerations in sub-areas 3 and 4. Sub-area 3 and portions of sub-area 4 are within the area from which rainfall excess would be removed by the suggested Tamiami Canal backpumping facility. This element of our study will establish both the water supply performance and feasibility of backpumping, and its environmental impacts. It is quite possible that the stringency of land use guidelines with respect to control of runoff water quality will be dependent to some degree on whether or not backpumping proves to be a viable water supply alternative.

3. What degree of flood protection is presently being offered in each of the five sub-areas?

The Central and Southern Florida Project system provides no flood protection for sub-areas 1 and 2.

Sub-areas 4 and 5 are served by the Tamiami and Miami Canals. Both of these canals were excavated to their present dimensions prior to the C & SF Project; there has been no enlargement under the Project. Flood protection is limited and is for all practical purposes nominal.

Sub-area 3 is provided somewhat better flood protection service by virtue of "secondary" canal construction undertaken by local interests. Flood protection is nevertheless limited.

Sub-areas 3, 4, and 5 are all within the limits of "Area B."

4. If backpumping does occur within "Area B" what would be the optimum situation; i.e., a set land use and development pattern for the area?

The optimum situation would be an integrated land use and water management plan for the area. From the water management agency standpoint the backpumping system design should be based on a firm long-term land use plan for the area supported by the necessary zoning maps and associated ordinances.

As noted earlier, any backpumping plan found to be feasible would produce some degree of improved primary drainage along with water conservation and supply benefits. The maximum design which the District considers reasonable in this regard is a peak runoff removal capability of 2" per day with water surface elevation of about 3.0 ft.msl. at the west end of the primary canal.

This design represents the maximum, or upper limit. Somewhat more restrictive criteria in terms of runoff removal capability are possible. Based on this upper constraining limit, however, it is possible for engineers, hydrologists and land planners to develop criteria for land occupancy, land use, and on-the-land water management (quantity and quality) which would maintain the long-term viability of the primary backpumping system.

What is most important here, in the District's opinion, is the action taken by the local elected officials having jurisdiction in first adopting the land use plan and its associated land and water management regulations and, secondly, in ensuring that they are adhered to on a continuing long-term basis.

It is my understanding that a report is to be prepared on the Study Area for presentation to the Metropolitan Dade County Commission. It is requested that this letter be incorporated in its entirety as an appendix or attachment to that report.

If my staff or I can be of further assistance to you and the Commission in this, or related matters, please do not hesitate to call on us.

Sincerely,

G. E. DAIL, JR.
Executive Director

GED:wst

APPENDIX D

EAST EVERGLADES MORATORIUM STUDY:

LAKE EXCAVATIONS

The following information is an analysis of lake excavations within sub-areas 4 and 5 of the East Everglades Moratorium Study area. Specifically, this brief report will explain the procedure for obtaining lake excavation permits, determine the location and aerial extent of lake excavations, and locate areas with active excavation permits.

A special use permit is required before excavation activities can be conducted in any given area. Upon application for a special use permit, a developer should obtain the approval of all interested governmental offices including but not limited to the Departments of Building and Zoning, Public Works and Pollution Control. The approval or disapproval by these departments is based upon a plan prepared delineating the area of excavation, the required slope of the excavation and the standing water and flash flood requirements of the area as well as the rights of way required. A bond is then posted to ensure the completion of the work as planned. Upon satisfactory completion, the bond is returned. The special use permit is then presented to the County Commission for final approval. If approved, the developer generally has ninety days to begin excavation. The permit is in effect for one year, but is renewable (by a hearing) until the excavation is completed.

In the East Everglades Moratorium Study area there are active permits for lake excavations totaling approximately 6,210 acres. Of this 6,210 acres, approximately 992 acres are presently under excavation leaving approximately 5,218 acres on which excavation is permitted but not actually completed. In addition to the 6,210 acres mentioned above, there are approximately 310 acres of land under excavation without active permits. Special use permits that are presently active allow lake excavations in the following areas: Sections 2, 13, 19, 20-26, 29, 31, 33, 34 and 36 of Township 53, Range 39; Sections 2, 12, 13, 26, 35 and 36 of Township 52, Range 39; and Sections 16 and 20 of Township 52, Range 40. Excavation is either completed or actively being conducted in the following areas: Sections 13, 24-26, 33, 34 and 36 of Township 53, Range 39; Sections 2, 12, 13, 15, 16, 25, 26, 35 and 36 of Township 52, Range 39; Sections 3, 9, 16 and 20 of Township 52, Range 40; and government lot 1 of Township 54, Range 39.

Sub-area 4 of the East Everglades Moratorium Study area contains approximately 3,918 acres of land under active permits for lake excavations with approximately 238 acres of this land presently excavated. This leaves approximately 3,680 acres of land on which excavation is permitted but not actually completed. There are about 85 additional acres in Sub-area 4 on which there are excavation activities but no active permit. In Sub-area 5 there are approximately 2,292 acres of land under active permits for lake excavations with about 754 acres actually being excavated.

Therefore, approximately 1,538 acres of land are under active permits for excavation activities but do not actually have these activities started. Sub-area 5 contains an additional 225 acres of land under excavation on which there is no active permit.

APPENDIX E

EXISTING ZONING: SUB-AREAS 1, 2, 3, & 4

ZONING DISTRICT	ACRES	PERCENT OF TOTAL
SUB-AREA 1		
GU	110,234	84.4
AU	10,730	8.2
EU-1	857	.7
BU-2	8	Less than .1
BU-3	5	Less than .1
IU-2	2,006	1.5
IU-3	6,720	5.1
TOTAL	130,560	99.9
SUB-AREA 2		
GU	13,760	95.55
AU	640	4.44
TOTAL	14,400	100.0
SUB-AREA 3		
GU	2,800	49.3
EU-1	60	1.0
RU-4A	40	.1
BU-2	2	Less than .1
BU-3	8	.1
IU-3	1,920	33.3
IU-C	930	16.2
TOTAL	5,760	100.0
SUB-AREA 4		
GU	17,640	82.3
EU-1	340	1.6
RU-1	40	.2
BU-2	5	Less than .1
BU-3	5	Less than .1
IU-1	40	.2
IU-2	400	1.8
IU-3	2,970	13.8
TOTAL	21,440	99.9

APPENDIX E

EXISTING ZONING SUB-AREA 5

ZONING DISTRICT	ACRES	PERCENT OF TOTAL
GU	22,385	60.31
AU	12,640	34.05
RU-1	687	1.85
RU-TH	118	.32
RU-4L	30	.08
RU-4M	27	.07
RU-4	34	.09
BU-1	4	.01
BU-1A	7	.02
BU-2	39	.11
BU-3	1	*
IU-1	30	.08
IU-2	164	.44
IU-3	587	1.58
IU-C	367	.99
	37,120 (58 Sq. Miles)	100.000

* Less than .01 Percent

Source: Based on Maps from the Building and Zoning Department

APPENDIX F

Ownership of Land: Sub-Areas 1, 2, 3, & 4.

Acres Owned*	Number of Owners	Total Acres Owned	Percent of Land Area	
Over 639	29	105,108	61.1	50.8
320-639	32	14,712	8.5	7.1
160-319	45	8,987	5.2	4.3
Under 160	**	43,353	25.2	21.0
Totals		172,160	100.0	83.2

*Single and Multiple, Contiguous Parcels
**Undertermined

Sources: Dade County Tax Assessment Department (June, 1974)

APPENDIX F

OWNERSHIP OF LAND: SUB-AREA 5

Acres Owned*	Number of Owners	Total Acres Owned	Percent of Land Area
Over 639	11	20,476	55.2
320-639	10	4,342	11.7
160-319	14	3,277	8.8
100-159	12	1,508	4.1
Under 100	Est. 2,000	7,517	20.2
Totals		37,120	100.0

*Single and Multiple, Non-contiguous Parcels

Source: Dade County Tax Assessment Department (July 1, 1974)

APPENDIX G

COMPREHENSIVE DEVELOPMENT MASTER PLAN FORMAT

Part I: Metropolitan Development Policies

The Proposed Metropolitan Development Policies identifies key development related issues in Dade County and recommends goals and policies which address these issues. Major areas of concern for which goals and policies were recommended are: land; environment; population; economy; services, and implementation. These proposed goals and policies were formulated initially by six individual Citizens Task Forces appointed by the Metropolitan Dade County Planning Advisory Board. A series of five workshop sessions consisting of all six Task Forces produced a consolidated set of recommended goals and policies. Upon adoption by the Dade County Commission, these policies will not only constitute an integral part of the overall Comprehensive Development Master Plan, but will provide substantial input into its remaining parts, the Environmental Protection Guide and the Metropolitan Development Guide.

Part II: Environmental Protection Guide

The Environmental Protection Guide will provide detailed criteria to be used in evaluating the effects of different types and intensities of urban development on the natural environment. It will delineate geographic areas that are generally suitable for urban development, areas that are suitable for development providing certain conditions are met, and areas that should be conserved and protected. Much of the guidance for formulating these criteria comes from the Proposed Metropolitan Development Policies formulated by the Citizens Advisory Task Force.

Part III: Metropolitan Development Guide

The Metropolitan Development Guide will include a graphically-illustrated 1985 medium-range plan and a longer-range plan to the year 2000. Although the level of specificity between the two might differ, they will generally indicate recommended densities, land use patterns, transportation facilities, and the extent of urbanization. It will provide guidelines for directing growth in a manner consistent with the policies contained in the Metropolitan Development Policies and the Environmental Protection Guide.

APPENDIX H

EXISTING LAND USE: SUB-AREA 5

LAND USE	ACRES		PERCENT OF TOTAL	
Residential		532.0		1.7
Single Family	556.25		1.5	
Multi-Family	4.25		*	
Mobile Homes	71.5		.2	
Commercial		12.0		*
Industrial		1,252.0		3.4
Public & Semi-Public		73.0		.2
Schools & Churches	24.0		.1	
Parks & Open Space	49.0		.1	
Transportation & Utilities		857.5		2.3
Airport	420.0		1.1	
Railway	15.0		*	
Communication Facilities	290.0		.8	
Powerline Easement	123.5		.3	
Sewage Treatment Plant	9.0		*	
Roadway		517.0		1.4
Agricultural		3,304.0		8.9
Waterbodies		1,179.5		3.2
Lakes	543.0		1.5	
Canals	556.5		1.5	
Canal Easements	80.0		.2	
Vacant		29,293.0		78.9
TOTAL		37,120.0		100.0%

* Less than .1 percent

Source: Aerial Photographs, Field Survey and Building Permits.

APPENDIX I

GUIDELINES FOR DENSITY OF RESIDENTIAL DEVELOPMENT

	Residential		Institution	Park & Recreation
Density	Dwelling Unit Per Gross Residential Area	Percent of Net Residential Area	Minimum Percent of Gross Area	Minimum Percent of Gross Area
Low-Medium	1.6 to 5.0	60%	7%	9%
Medium	5.1 to 11.0	55%	8%	10%

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APPENDIX J

Ordinance Creating Areas of Critical Environmental Concern

MEMORANDUM

103.01-14

TO: Mr. Reginald Walters
Planning Director

DATE: June 24, 1974

SUBJECT: Ordinance Creating Areas of Critical Environmental Concern

FROM: Alan S. Gold
Assistant County Attorney

This memorandum proposes, in outline form, an ordinance which will establish areas of critical environmental concern for Metropolitan Dade County. The proposed ordinance can be utilized in conjunction with the East Everglades Building Moratorium Study and in the implementation of Part II of the updated Metropolitan Dade County Master Plan.

We suggest that the ordinance contain the following provisions:

1. Areas of critical environmental concern. The Board of County Commissioners shall have the right to designate portions of the unincorporated areas of Metropolitan Dade County as areas of critical environmental concern. Such areas must contain, or have a significant impact upon, environmental, historical, natural or archaeological resources of Metropolitan Dade County.

2. Purpose. The ordinance will provide a statement of legislative purpose which substantiates the need for the regulations as relating to the public health, safety and quality of life of the citizens of Metropolitan Dade County. It should stress the need to conserve and protect the natural, environmental and economical resources and the scenic beauty of the areas so designated. It should also set forth as its purpose the need to preserve and protect water quality, the ecologically related wetlands, the estuarine fisheries, and the fresh water aquifer.

3. Boundaries. The ordinance will designate those areas which are of critical environmental concern and set forth their legal boundaries. A scaled map depicting the boundaries should be prepared and incorporated as part of the ordinance.

4. Critical findings. The ordinance will set forth in detail the aspects or nature of the area so designated which cause it to contain or have a significant impact upon the environment, historical, natural or ecological resources of Dade County.

5. Uses under existing zoning classifications. The ordinance will provide that the designation of the area, or any part thereof, as an area of critical environmental concern does not in any manner change or modify either the zoning classification appurtenant thereto, or, except as otherwise provided in the ordinance, the uses permitted under the applicable zoning regulations.

6. Performance standards. The ordinance will provide that no use permitted under the existing zoning classification or regulations as applied to the area shall violate the performance standards enumerated in the ordinance, without a permit issued and approved by the Board of County Commissioners. The ordinance should then define those performance standards which are essential to protect and preserve the ecology of the critical area.* As an example the following performance standard was determined to be of critical importance in establishing regulations for the Big Cypress Area of critical State concern:

"Soils exposed during site alteration shall be stabilized and retention ponds or performance equivalent structures or systems maintained in order to retain run off and siltation on the construction site. Restoration of vegetation to site alteration areas shall be substantially completed within 180 days following completion of a development. Revegetation shall be accomplished with pre-existing species or other suitable species except that undesirable exotic species (see list below) shall not be replanted or propagated.

*It is suggested that the Planning Department work with the Developmental Impact Committee in preparing the performance standards after obtaining community imput and evaluation.

"Australian pine - Casuarina equisetifolia
Bishopwood - Bischofia javanica
Brazilian pepper (holly) - Shinus terebinthfolius
Castor bean - Ricinus communis
Common papaya - Carica papaya
Common snakeplant - Sanseviera trifasciata
Day jessamine - Cestrum diurnum
Hunters robe - Raphidophora aurea
Melaleuca (cajeput) - Melaleuca leucadendra
Queensland umbrella tree - Schefflera actinophylla
Trailing wedelia - Wedelia trilobata

"No mangrove trees or salt marsh grasses shall be destroyed or otherwise altered. Plants specifically protected in this regulation include:

"Red mangrove - Rhizophora mangle
Black mangrove - Avicennia nitida
White mangrove - Laguncularia racemosa
Needlerush - Juncus roemerianus
Salt cordgrasses - Spartina alterniflora, S.patens, S.cynosuroides, S.spartinae
Seashore saltgrass - Distichlis spicata

"Fill areas and related dredge or borrow ponds shall be aligned substantially in the direction of local surface water flows and shall be separated from other fill areas and ponds by unaltered areas of vegetation of comparable size. Dredge or borrow ponds shall provide for the release of storm waters as sheet flow from their downstream end into unaltered areas of vegetation. Access roads to and between fill areas shall provide for the passage of water in a manner approximately the natural flow regime and designed to accommodate the 50 year storm. Fill areas and related ponds shall not substantially retain or divert the total flow in or to a slough or strand or significantly impede tidal action in any portion of the estuarine zone."

7. Permits. The ordinance will establish a permitting procedure to allow variance from the performance standards if it is shown by the applicant that such a variance would neither have an adverse environmental effect nor result in any irreversible environmental changes, should it be implemented. The applicant will be required to prepare an environmental evaluation including a description of the proposed project or action and its purpose; the probable impact of the proposed action on the environment; any probable adverse environmental effects which cannot be avoided should the proposal be implemented; alternatives to the proposed action; relationship between local short-term uses of environmental resources and the maintenanc e and enhancement of long-term productivity, and any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. It is suggested that the Developmental Impact Committee be responsible for analyzing the aforesaid environmental evaluation and make recommendations to the Board of County Commissioners concerning whether the permit should be granted, granted with conditions, or denied.

8. Requests for zoning relief. All requests for zoning relief which would permit, if granted, development activity having a significant impact on the environment, will be required to be accompanied by an environment evaluation as above outlined.

9. Rules and regulations. The Developmental Impact Committee will promulgate, after public hearing, rules and regulations to implement the proposed ordinance.

10. Judicial review. The ordinance will provide a means of judicial review from the decision of the Board of County Commissioners with regard to its decision concerning the permit.

11. Additional provisions. The ordinance will provide for inspections, revocation of permits, and enforcement.

The ordinance will consider the question of vested rights in property and specify that there will be periodic investigations and reports to determine if the areas described as environmentally critical continue to meet the standards pertaining thereto. In this regard, the Planning Department will be required to prepare updated area evaluation studies.

Please advise as to your comments and recommendations regarding the suggested outline.

Alan S. Gold
Assistant County Attorney

ASG/dkr

cc: Allan Milledge, Esquire
Honorable R. Ray Goode

Study Team Participants

Metropolitan Dade County
R. Ray Goode, County Manager

- Planning Department
  - Reginald R. Walters, Director
  - Allan R. Bly, Asst. Director
  - Dr. Charles W. Blowers, Chief
    Research Division
  - Jack A. Goodin, Chief
    Neighborhood Planning Division
  - Walter F. Geiger, Chief
    Development Planning Division
  - John Woodlief, Chief
    Metropolitan Planning Division
  - *Leslie R. Green, Principal Planner
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  - *Paul Mushovic, Senior Planner
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  - Nancy Bahn, Principal Planner
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  - Richard Eigen, Principal Planner
  - Gary Greenan, Principal Planner
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  - Jack Farash, Senior Planner
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  - Sam Berke, Graphics
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  - Bernard Coffee, Graphics
  - Nell Allred, Head Secretary
  - Jean Oppenheimer, Secretary
  - Delia L. Diaz, Secretary
  - Judy Busser, Secretary
  - Georgia Leslie, Secretary
  - Caridad Leon, Secretary

- Building and Zoning Department
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  - Chester Czebrinski, Asst. Director

- Cooperative Extension Department
  - John D. Campbell, Director

- Fire Department
  - V. C. Radford, Chief
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- Miami-Dade Water & Sewer Authority
  - Garret Sloan, Director

- Parks and Recreation Department
  - Robert D. Scharbert, Supt.,
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  - Dick Jones, Park Planner
  - Al Hetzell, Parks Service Officer

- Pollution Control
  - Colin Morrissey, Director

- Port Authority
  - Richard Judy, Director
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- Public Safety Department
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- Tax Assessment Department
  - A. H. Blake, Jr., Tax Assessment

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  - Eugene Simm, Director

- Board of Public Instruction
  - Mrs. Carol Clark
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- State of Florida-Division of Agriculture
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*Principal authors of this report